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IN THIS ISSUE

Comparative Dimensional Stability and Versatility of Rubber Base Impression Materials	536
Fixed Bridges Assembled in the Mouth—Part Four	542
Simplified Lead Shield for Gonadal Protection in Dental Radiography	546
Oral Injuries as a Complication of Maxillofacial Injuries	548
Surgical Reduction of Fracture of Edentulous Mandible	550
Method of Localizing Root Tips and Foreign Bodies	555
The Teeth and the Face	557
Clinical and Laboratory Suggestions	558
Editor's Page	560
Medicine and the Biologic Sciences	561
Annual Index	565
Extra-Angles	570

A Complete Table of Contents
Appears on page 535

Cover illustration—Sears
article, page 557



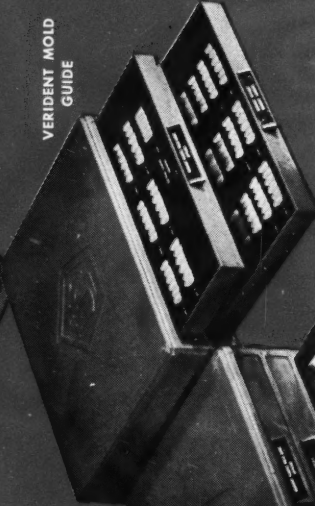
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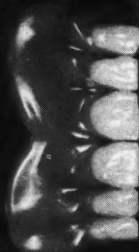
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About Our CONTRIBUTORS

WILLIAM ROY EBERLE, D.D.S. (Northwestern University, Dental School, 1914) is known to DIGEST readers for his publications on a variety of dental subjects. In the current issue Doctor Eberle presents an important survey, **COMPARATIVE STABILITY AND VERSATILITY OF RUBBER BASE MATERIALS**.

COYL B. THOMAS, D.D.S. (St. Louis University, School of Dentistry, 1929) presents **FIXED BRIDGE ASSEMBLED IN THE MOUTH**, the fourth and last installment of his serial article.

MANUEL I. WEISMAN, D.D.S. (Northwestern University Dental School, 1951) is a general practitioner who devotes about half his practice to endodontics. Doctor Weisman has published previously and is a frequent contributor to the department **CLINICAL AND LABORATORY SUGGESTIONS**. For his first full-length article in DIGEST he presents **A SIMPLIFIED LEAD SHIELD FOR GONADAL PROTECTION IN DENTAL RADIOGRAPHY**.

STANLEY KOGAN, D.D.S. (University of Maryland Dental School, 1954) is Chief Resident, Oral Surgery, at the Jersey City Medical Center, Jersey City, New Jersey. Doctor Kogan has taught basic science at Tufts Dental School and has published previously. For his first appearance in DIGEST he presents **CRANIAL INJURIES AS A COMPLICATION OF MAXILLOFACIAL INJURIES**.

ROBERT A. ATTERBURY, B.S., D.D.S. (University of Illinois, College of Dentistry, 1942) is Clinical Assistant Professor of Oral and Maxillofacial Surgery, University of Illinois, Research and Educational Hospitals, and is well known to DIGEST readers for his many practical presentations. This month, in collaboration with **SUNDER J. VAZIRANI, D.D.S., M.S.** who was until recently Instructor in Oral and Maxillofacial Surgery and Assistant in Anatomy in the Research and Educational Hospitals, Doctor Atterbury presents **SURGICAL REDUCTION OF FRACTURE IN EDENTULOUS MANDIBLE**. Doctor Vazirani has returned to his native country, India, where he will be engaged in practice.

MORTON MALKIN, B.A. (Brooklyn College), D.D.S. (New York University College of Dentistry, 1956) specializes in oral surgery. Doctor Malkin has published two articles previous to his present article in DIGEST, **A METHOD OF LOCALIZING ROOT TIPS AND FOREIGN BODIES**.

Comparative Dimensional Stability and Versatility of Rubber Base Impression Materials <i>William Roy Eberle, D.D.S.</i>	536
Wound Healing: An Evaluation of Surgical Suture Material (An Abstract) <i>R. W. Postlethwait, M.D., James F. Schauble, M.D., M.L. Dillon, M.D., and Jeane Morgan, A.B.</i>	541
Fixed Bridges Assembled in the Mouth—Part Four <i>Coyle B. Thomas, D.D.S.</i>	542
Adamantinoma of the Jaw (An Abstract)	545
A Simplified Lead Shield for Gonadal Protection in Dental Radiography <i>Manuel I. Weisman, D.D.S.</i>	546
Cranial Injuries as a Complication of Maxillofacial Injuries <i>Stanley Kogan, D.D.S.</i>	548
Surgical Reduction of Fracture in Edentulous Mandible <i>Robert A. Atterbury, B.S., D.D.S., and Sunder J. Vazirani, D.D.S., M.S.</i>	550
A Method of Localizing Root Tips and Foreign Bodies <i>Morton Malkin, D.D.S.</i>	555
Definitions of Cerebral Anoxia (An Abstract)	556
The Teeth and the Face <i>Victor H. Sears, D.D.S.</i>	557
Clinical and Laboratory Suggestions	558
1. Water-Spray Mirror. 2. Protection of Opposing Teeth During Exodontia. 3. X-ray Film Mounting. 4. X-ray Processing. 5. To Clean Saliva Ejector. 6. Cleaning Air-Turbine.	
The Editor's Page	560
Medicine and the Biologic Sciences	561
A Stannous Fluoride-Silex-Silicone Dental Prophylaxis Paste with Anticariogenic Potentialities (An Abstract) <i>V. A. Segreto, D.D.S., N. O. Harris, D.D.S., and W. R. Hester, D.D.S.</i>	563
Annual Index	565
Contra-Angles	570

EDWARD J. RYAN, B.S., D.D.S., Editor**WANDA T. PICKARD, B.A., Assistant Editor**

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The magazine is mailed on the fifteenth of the month of issue.

VICTOR H. SEARS, D.D.S. (University of Illinois, College of Dentistry, 1916) has published seven books on dental subjects and

more than a hundred articles. He presents in the current issue a pictorial demonstration, **THE TEETH AND THE FACE**.

Comparative Dimensional Stability and Versatility of RUBBER BASE Impression Materials

WILLIAM ROY EBERLE, D.D.S., Chicago

DIGEST

Skinner and Cooper¹ have demonstrated the superiority of the rubber base materials over the colloids. Considerable confusion, however, exists concerning the relative merits and differences of

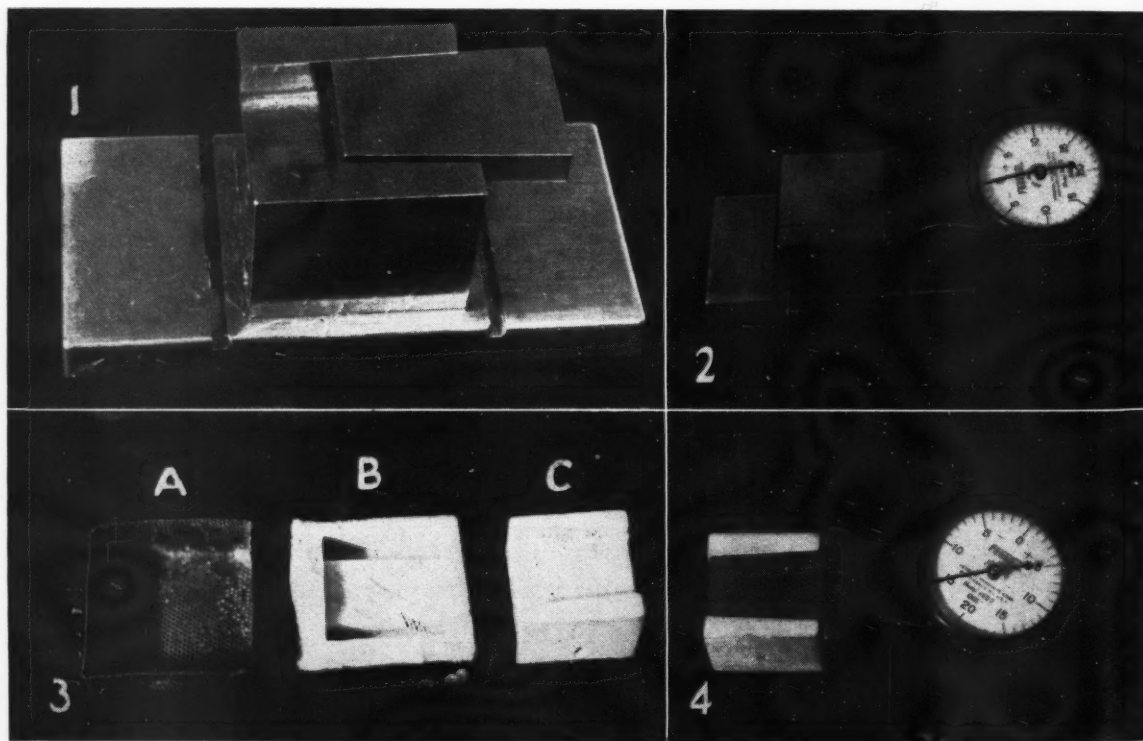
the various brands of rubber bases and how they compare with the hydrocolloid elastic materials. This article describes the composition of the materials obtainable and presents a complete summary of the results of an investigation, by the author, of these materials in clinical practice.

¹Skinner, E. W., and Cooper, E. N.: Desirable Properties and Use of Rubber Impression Materials, JADA 51:523 (November) 1955.

Development of Materials

The first synthetic rubber-like material commercially available was accidentally discovered by J. C. Patrick about 35 years ago. It was called Thiokol. Since that time a dozen or more materials have been developed with a variety of molecular structures and properties.

Polymers Introduced—In 1943 the Thiokol Chemical Company of Trenton, New Jersey, introduced a liquid polysulphide polymer LP-2 that re-



1. Showing slot in block and bar 1 inch long precision tapered to 1:10 ratio.

2. Bar inserted in slot to perfect fit, dial indicator reading zero.

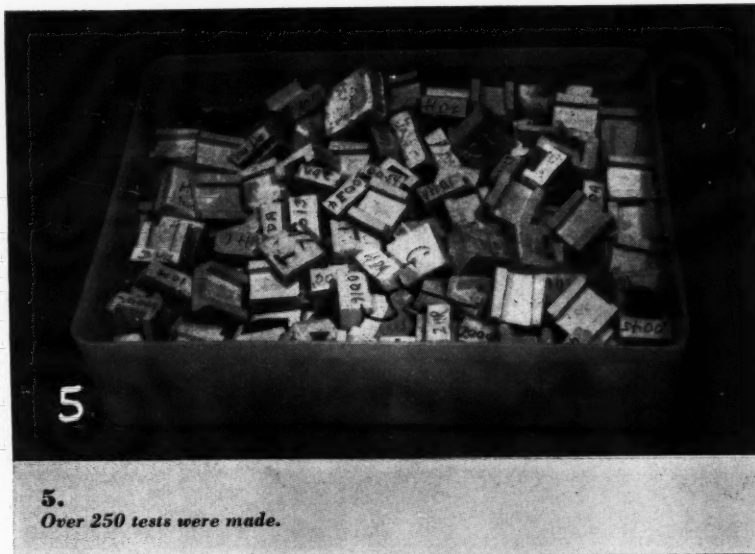
3. A, Tray. B, Impression. C, Stone Die.

4. Bar in stone die: Dial indicator reading .025, indicating shrinkage of .0025.

sembled a latex. Later they discovered catalysts that would "vulcanize" this polymer at room temperature in a few minutes. This made it useful to dentistry. LP-2 is a poly-functional mercaptan which accounts for its strange odor. The molecule is a long chain with the average structure, $\text{H S (C}_2\text{H}_4\text{-O-CH}_2\text{-S S)}$. Lead peroxide is the catalyst most commonly used giving the rubber an unpleasant brown color.

Silicone Material—The only other rubber base at present useful in dentistry is silicone. Others may be evolved. Silicone was used extensively during World War II, because it is elastic at extreme polar temperatures and resists heat over 550 degrees Fahrenheit. Like all the rubber materials, it has a long chain molecule and is identified as Dimethylpolysiloxane, which means a long string of silica atoms bonded by oxygen atoms with each silica atom holding two methyl groups.

Three Basic Types of Silicone—Silicone rubber became useful to dentistry by the discovery that metallic oleates and octoates would activate the elastomer to rubber quickly at room temperature. There are two types of this material obtainable only from two German and two American



firms. There are therefore only three basic types of dental rubber:

No. 1 Thiokol only from Thiokol Chemical Company.

No. 2 Silicone only by Wacher Chemical, Germany (Dow Corning, U.S.A.).

No. 3 Silicone only by Bayer, Germany (General Electric, U.S.A.). Dental firms color and package the bases but usually work out their own catalysts. Most of these firms have stated that no dimensional change has occurred and that casts can be poured at any time. This was unbelievable in materials of this nature. Study of the materials was therefore undertaken by the author.

Method of Investigation

Figure 1—Carried on by use of bar block gauge, an ingenious device made it possible to record .0001 inches on a dial indicator reading of .001 inches. Bar and slot are precision tapered 1:10 ratio to fit each other.

Figure 2—The bar is slipped into the slot and the dial indicator applied. If the reading is zero, fit is perfect, meaning no change.

Figure 3—(A) A tray is made. (B) An impression is taken. (C) A stone die is poured, in quality stone.

A duplicate of the block in stone is completed. If the impression material shrinks the stone slot is narrower and the bar fails to enter com-

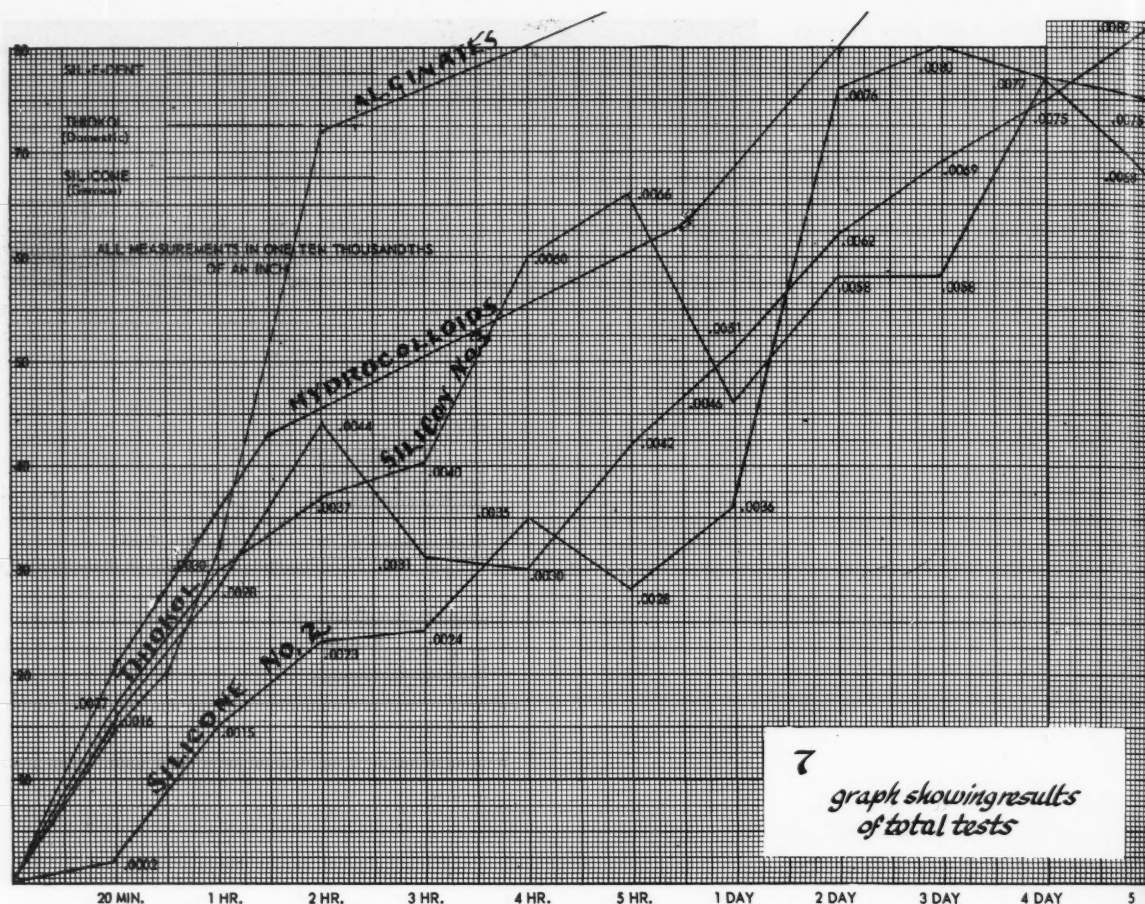
6. Summary of comparative changes of the three basic types of rubber base materials.

Summary of Comparative Changes of the Three Basic Types of Rubber Base Materials

Changes are measured in .001 inches to lineal inch, with bar block gauge, manufactured by The Velocity Engineering Company, Burbank, California. Figures are an average of all tests made in that respective time lapse. Total tests — 150

Time Lapse From Taking Impression to Pouring Cast

Type	20 Min.	One Hour	Two Hours	Three Hours	Four Hours	Five Hours	One Day	Two Days	Three Days	Four Days	Five Days
No. 1 Thiokol	.0017	.0030	.0037	.0040	.0066	.0066	.0046	.0058	.0058	.0077	.0068
No. 2 Silicone (Sil-E-Pent)	.0002	.0015	.0023	.0024	.0035	.0028	.0036	.0076	.0080	.0077	.0075
No. 3 Silicone	.0016	.0028	.0044	.0031	.0030	.0042	.0051	.0062	.0069	.0075	.0082



pletely. If expansion occurs, the slot is wider and the bar goes through to minus reading.

Figure 4—An inch-long bar is inserted in the stone die. Indicator reading of .25 inches indicates shrinkage of .0025 because of the perfect taper of the bar 1:10 ratio.

Materials Selected For Tests

Silicone type No. 3 and Thiokol No. 1 were chosen by lot from a list of firms using them. Sil-e-dent® was selected as typical of type No. 2. Alginate and reversible hydrocolloids were selected from several popular brands.

As shown in Figure 5, over 250 tests were made with time lapses from immediate pours to hours, days, and weeks. Colloids were stored at 100 per cent humidity, a step unnecessary with rubbers.

Advantages of Rubber Materials—

7. Graph showing results of total tests.

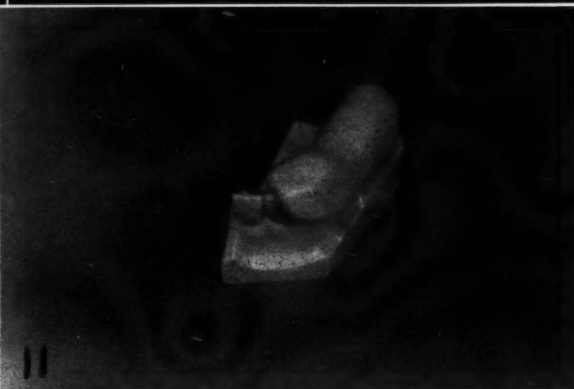
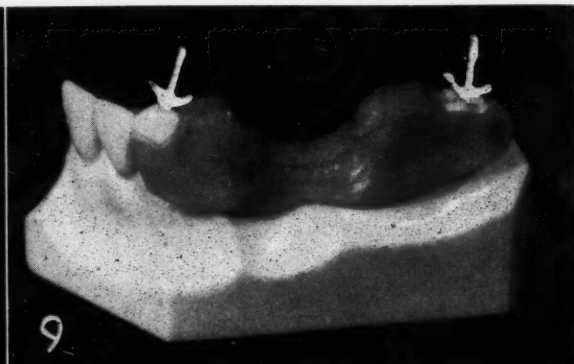
It was soon apparent that the rubbers took sharper unwrinkled impressions and that their casts had harder surfaces with sharper margin detail. This was due no doubt to the high water content of the colloids which interfered with the surface set of the stone. The rubbers, moreover, were easily and quickly mixed and required no heating or expensive equipment as do the reversible hydrocolloids.

Removal Difficult—The type No. 2 was easier to mix than No. 3. Thiokols have a disagreeable odor and a stickiness that must be removed from hands, face, and implements with a cleaning solution. Silicones are sticky but they are easily whisked off after setting. *Caution: Protect the patient's clothing and use tissues in-*

stead of towels. There is no known solvent if the setting rubber is rubbed into the meshes of fabrics.

Errors in Use Tabulated—Type No. 2 appears the best for the first three or four hours after which all the rubber materials follow an irregular pattern until the fourth day, when they are all in the same place. The colloids run a poor fourth and fifth. Most of the error was shrinkage but the alginates were unpredictable; swelling occurred as often as shrinkage. To avoid confusion this was all tabulated as error whether plus or minus.

Use of Custom-Fitted Acrylic Tray—Graphs show the advantage the rubber materials have over the colloids; but they have another superiority that is much more important. Rubber has many times the tear, elongation, and compression strength. These properties allow the use of a new technique, the custom-fitted



8.
Study cast of bridge.

9.
Baseplate wax is warmed and molded over abutments. Arrows show where wax is cut off occlusal to provide stops.

10.
Mix and mold tray acrylic to sheet 3 millimeters thick.

11.
Mold over waxed cast, trim periphery to provide rim lock.

12.
Silicone No. 2 ready to mix. Only one consistency necessary because syringe is loaded in few seconds, with Eberle syringe.

13.
Syringe loaded as a gun in seconds by means of side port and sleeve valve.

acrylic tray. These close-fitting trays reduce the bulk of the rubber to a minimum. Perforated metal trays are contraindicated because they use too great a volume of material and there is danger of distortion from pinching. The graph is based on changes

in a lineal inch. It can be readily understood that if only one-tenth of an inch in material is used the actual error is reduced by one-tenth. Another disadvantage, less important, is that the rubber bases are more expensive. The acrylic trays are ap-

plied in full and partial denture impressions, inlays, and bridges.

Procedure for the Acrylic Tray

The following steps are taken:

1. A study case is made (Fig. 8).



14



15



16



17

14. Rubber is tough: isolated thin teeth may break. Three things to prevent this: 1. Lubricate impression. 2. Paper clip pins. 3. Slice rubber in undercut and interproximal areas.

15. Dentist pours immediately into typadon and sends to laboratory.

16. Test bridge fits all casts, run one day apart. Shows usability of close fitting acrylic tray technique.

17. Box cut from denture, filled with silicone, treating chronic sore ridges.

2. A sheet of baseplate wax is molded over the ridge and abutments. Cut the wax short of the periphery to provide a rim lock. Expose the adjacent teeth on the occlusal as shown in Figure 9. This permits holding the tray steady during set.

3. Mix Coldpac® tray plastic according to directions (Fig. 10). When the mix is not sticky, with wet fingers mold or roll on a wet slab to a sheet 3 or 4 millimeters thick.

4. Mold over wax and trim with knife. A handle may be formed from the surplus and tacked on with a touch of monomer. This is unnecessary for silicones because removal from the fingers is no problem. When hard, heat, and remove wax. Trim and polish sharp edges. Make undercuts or drill holes to help adhesive hold rubber (Fig. 11).

Taking the Impression

1. When the abutments are pre-

pared retract the gingival with alum paste and epinephrine. The only time any of the rubber materials push back the gingival is when the set has gone too far. Bleeding will cause bubbles in the wax.

2. Put the adhesive on the tray five minutes before mixing. Mix according to the dealer's directions (Fig. 12).

3. The rubber materials are viscous and loading the syringe is a problem. The Eberle syringe was designed for quick and effortless loading.

(A) By means of an aperture on the side and a sliding sleeve valve, the syringe is loaded as a gun in a few seconds while the mix is quite "flowable."

(B) Start ejection at the bottom of all preparations. After ejection pull the plunger from the syringe (it is easier at this time) and load the tray.

(C) Push it firmly to place and

hold. By this time the mix has set to a tray consistency.

With this method two or three viscosities are unnecessary. A single mix consumes less time, material, and effort. In addition an extremely fast set may be used (Fig. 13).

Pouring the Cast

Rubber is tough and thin isolated teeth may be broken in separating. Lubrication helps. A pin made from paper clips sharpened and stuck into the rubber is an aid.

Protection of Teeth—Another precaution is to slice through the rubber with a section of thin razor blade. Do this in several directions where undercut is severe and in thick interproximal areas. The rubber returns to position, but the cuts reduce the pull of the material in separating. This procedure is indicated in repairing impressions or in taking an impression in an impression. Surplus is

permitted to escape without distorting the rubber (Fig. 14).

To Obtain Accuracy—For absolute accuracy pour immediately (Fig. 15). For dentists who want accuracy but depend on a distant laboratory a Typadon® or equivalent apparatus should be procured. A few minutes may be spent pouring the cast; the laboratory takes it from there.

Time Lapse Permitted—The acrylic tray technique allows a time lapse; on the fourth day (Fig. 6) while the shrinkage is .008 inches or .8 of 1 per cent the actual change is .0008 inches because about one-tenth of an inch of material is being used. This is a usable error because it amounts to only a little more than the expansion of the newer stones. Proof was demonstrated in a series of casts made daily. The simulated bridge fits all casts (Fig. 16).

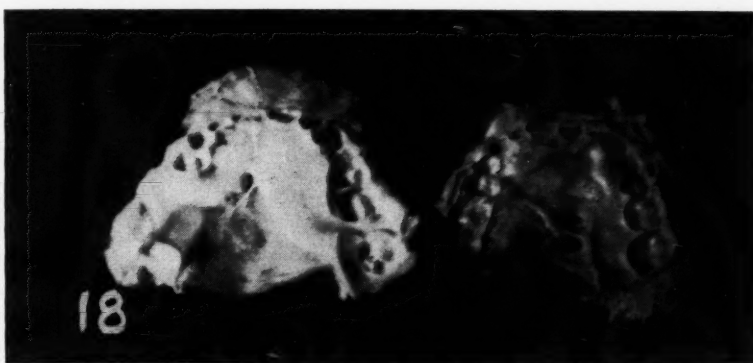
Versatility

Rubber base materials are extremely versatile. They may be used in all types of impressions:

1. In cases where denture patients wish new dentures the silicones are great time-savers. Impressions are taken inside the old dentures; no adhesive is used, the surface is well dried. While the patient waits casts are poured. As soon as the stone sets separate, the rubber is flipped off the dentures and they are returned to the patient.

2. The flesh-colored silicones are valuable in temporarily rebasing immediate insertion cases where bone is still sore.

3. For knife-edged ridges and other chronically distressed areas a deep



18.

Occlusion bite. Smear both sides of .040-inch Fiberglas® sheet with silicone.

box with severe undercuts is cut (Fig. 17). If necessary for depth thicken the denture. Use adhesive liberally in box and well over margins. Whisk off flash or any bulge with wide rounded rubber wheels. Cases treated over three years ago retain original softness.

4. The author has used the material extensively for "bites" instead of sheet wax (Fig. 18). Rubber mix is smeared on both sides of a sheet of Fiberglas®.

Conclusions

Bar block gauge capable of measuring changes of .0001 inches in an inch length was used to make over 250 tests with various time lapses on all types of elastic impression material.

Results were tabulated and graphs were made (Figs. 6 and 7). American silicone No. 2, typified by Sil-e-dent® was found to be most exact for the first 3½ hours of any elastic material now being used in dentistry.

In addition this type has the following advantages over Thiokol (mercaptan) rubber:

1. Odorless
2. Tasteless
3. Not sticky when set
4. Never gags the patient
5. Attractive appearance
6. Easily mixed
7. Easily copperplated
8. Only one consistency necessary when fast loading syringe is used
9. Used in all types of impressions
10. Useful as soft liners

It is evident that all elastic impression materials have varying dimensional change with time lapse.

It is evident that all should be poured immediately.

Because of toughness rubbers have great advantage. Close-fitting acrylic trays may be used minimizing bulk of material. This reduces actual dimensional change so that casts may be poured several days later with usable exactness.

55 East Washington Street

Wound Healing: Evaluation of Surgical Suture Materials

R. W. POSTLETHWAIT, M.D., JAMES F. SCHAUBLE, M.D.,
M. L. DILLON, M.D., and JEAN MORGAN, A.B., Durham, North Carolina

Summary

Plain and chromic catgut, silk, cotton, wire, nylon, ramie, nymo, dacron, and teflon were studied in animals from the standpoint of tensile strength of the sutured rectus wound, histology of this wound, tensile strength of the implanted

suture loop, and grade of tissue reaction to the suture. The cutgut sutures were similar to the nonabsorbable sutures until absorption began. At this time, the tissue reaction increased and the tensile strength of the suture fell rapidly. The synthetic sutures, and particu-

larly teflon, caused little tissue reaction and maintained tensile strength well. The tendency for the knot to slip and untie was a disadvantage but the other favorable characteristics were so decisive that alterations should be sought to produce a dependable knot.

From *Surgery, Gynecology and Obstetrics* 105:566 (May) 1959.

FIXED

BRIDGES

Assembled

in the Mouth

Part Four

COYL B. THOMAS, D.D.S.,
Lebanon, Missouri

DIGEST

This is the last in a series of four articles presented under this general title. In this final installment the problem of a technique for the construction of the hygienic bridge is discussed and step-by-step directions are given for completing the technique.

Technique for Constructing Hygienic Bridge

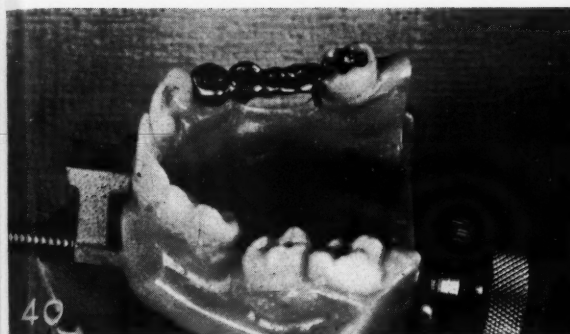
A hygienic bridge may be constructed in two sections and assembled in the mouth if there is enough depth to allow construction of a sufficiently



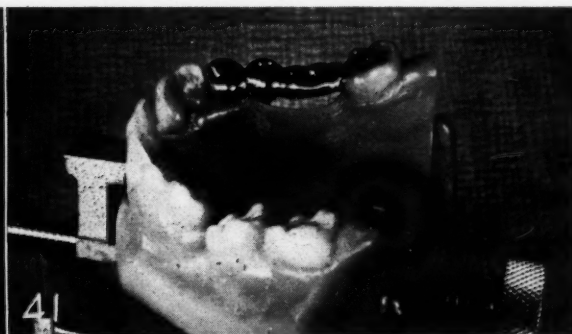
37.
Placing pin in hole with amalgam carrier.

38.
One pin in place, second hole bored.

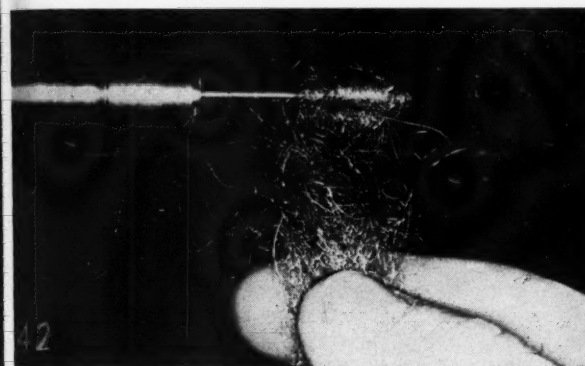
39.
Pins covered with cold cure acrylic.



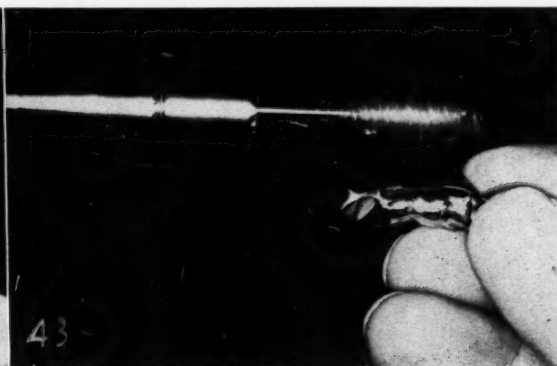
40.
Lingual view of hygienic bridge. One pin in place.



41.
Lingual view of hygienic bridge; pins cut off and polished.



42.
Attaching steel wool to lathe mandrel.



43.
Polishing lingual of bridge with steel wool.

strong beam. If it is desired, the facings may be of the cold cure acrylic rather than the interchangeable type.

Method of Construction—Figure 37 shows a hygienic bridge under construction with one hole bored and tapered, and with a pin about to be carried to place by means of an amalgam carrier. It is much easier to start a tapered pin in a tapered hole than to start a screw in a threaded hole.

Use of Pin Illustrated—1. Figure 38 shows one pin in place with the hole bored and tapered to receive the pin.

2. In Figure 39 the pins have been covered with cold cure acrylic which is placed after assembling the bridge in the mouth.

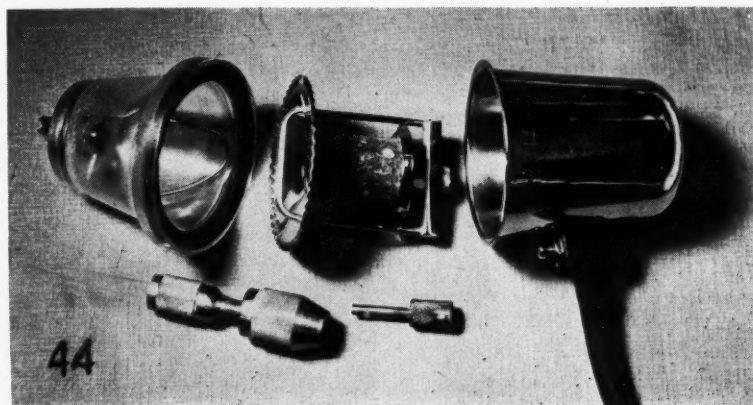
3. The lingual view in Figure 40 shows one pin cut off and polished and the other not dressed down.

4. In Figure 41 both pins have been polished.

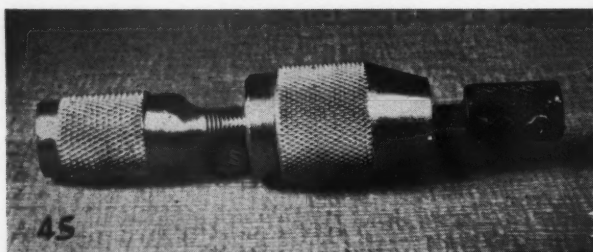
Space Left Under Bridge—In the illustrations it can be seen how the clearance has been achieved to permit cleaning under the bridge. The beam should be placed as far buccally as the backing will permit as

this is where the greatest depth is located. This is necessary in all cases and especially where the space from the occluding surface of the bridge to the soft tissue is shallow.

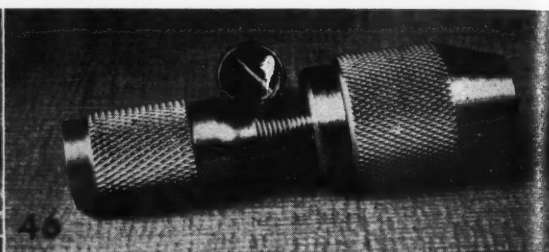
Method to Burnish—In order to



44.
Disassembled casting unit.



45.
Chuck to fit lathe.



46.
Chuck with turning spindle resting on it. End view of spindle.

burnish a surface where it is not desirable to grind the surface away during the polishing operation steel wool may be attached to an old crosscut fissure bur in the lathe chuck by the simple expedient of holding a small tuft to the bur while it is in motion as shown in Figure 42. The gold will receive a high luster when held against this rotating steel wool (Fig. 43). This is also an excellent method of burnishing the inside of clasps on removable bridges.

Vacuum Investing and Hygroscopic Expansion

In the construction of precision bridges vacuum investing and hygroscopic expansion are essential.

Investment Procedure—By securing a casting unit similar to the one shown disassembled in Figure 44, preparing a method of turning the mixing bail, and using a vacuum pump the investment may be mixed in a vacuum and poured in a vacuum. An efficient and inexpensive way to accomplish this is the following:

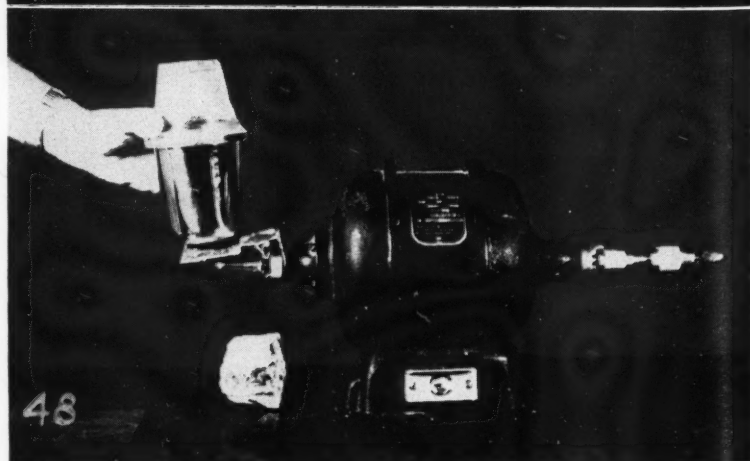
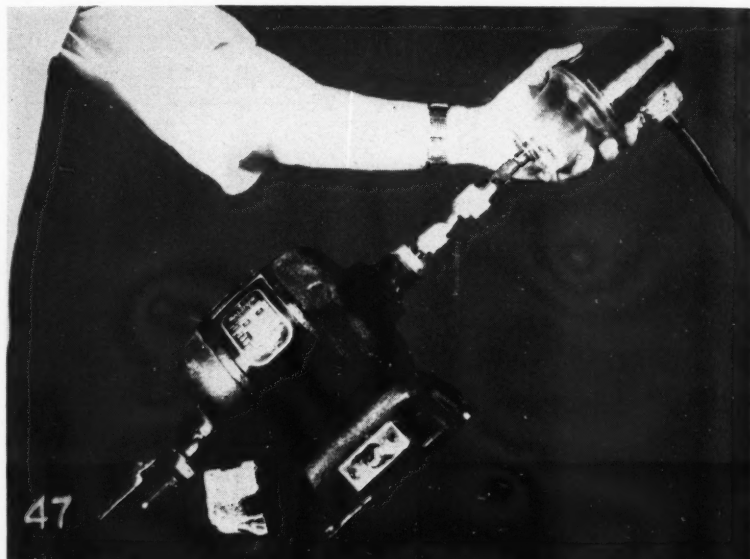
1. Secure a chuck to fit the lathe (Fig. 45). Make a turning spindle which can be seen end view lying on the chuck in Figure 46, and inserted in the chuck in Figure 45.

2. Place the lathe at an angle (Fig. 47) and mix the investment on one end of the lathe.

3. Set the lathe level, turn the casting unit so that the mix is in the top part of the unit, and place the unit on the other end of the lathe which contains an offset spool to serve as a vibrator (Fig. 48).

4. Pour the mix into the casting ring contained in the lower end of the casting unit. All of this is done while a vacuum pump is attached to the hose of the casting unit.

Vacuum Pump Used—An aspira-



47.
Mixing investment on one end of lathe.

48.
Pouring mix in vacuum. Vibrating on other end of lathe.

49.
Mobile aspirator used as vacuum pump.

50.
One type of refrigerator unit that may be used as a vacuum pump.

51.
A type of refrigerator unit that makes an efficient vacuum pump.

tor (Fig. 49) may be used. A pump salvaged from a refrigerator, however, or deep freeze unit will develop a better vacuum. A refrigerator unit (Fig. 50) may be used but most of these units contain sulphur dioxide and when the lines are cut this gas combines with oxygen to form sulphuric acid. This acid is extremely corrosive and will entail disassembling the unit to clean it before it can be used. The type illustrated in Figure 51 usually contains Freon® (Dichlorodifluoromethane) and it will not be necessary to disassemble it as in the case of the other type.

Bubbles Eliminated—The pump described is highly efficient and will eliminate almost all bubbles in the castings. A more detailed account of the utilization of apparatus available in most dental laboratories in the hygroscopic technique appears in the May 1957 issue of DENTAL DIGEST.

125A West Commercial

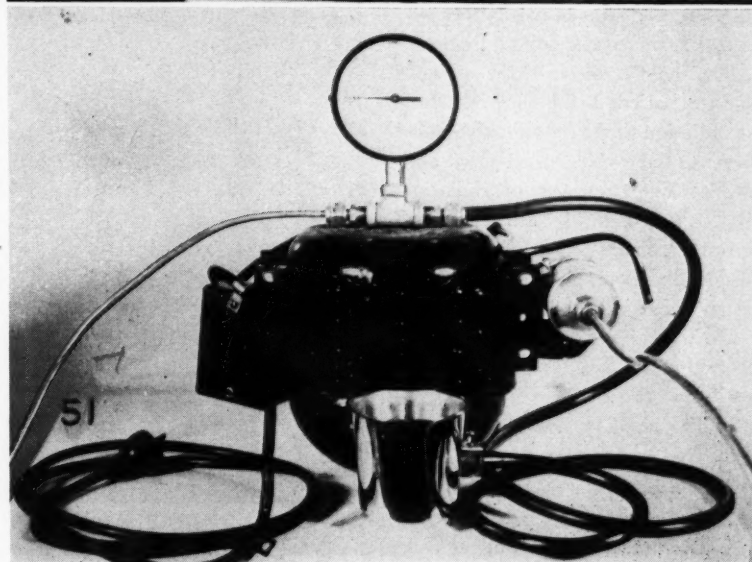
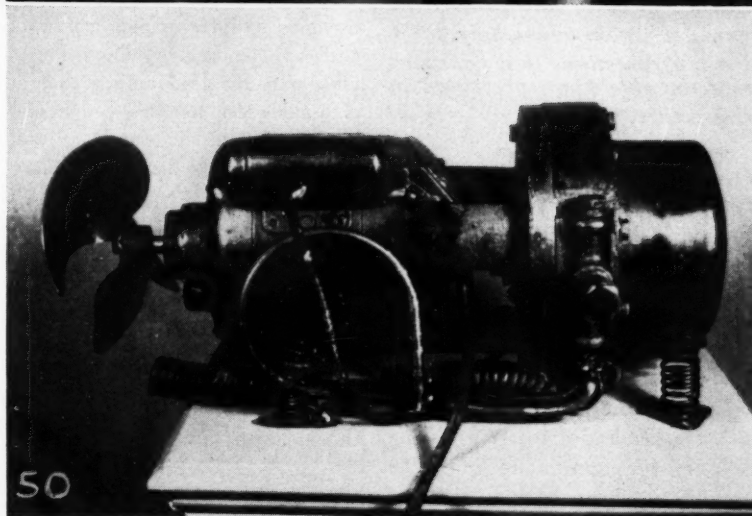
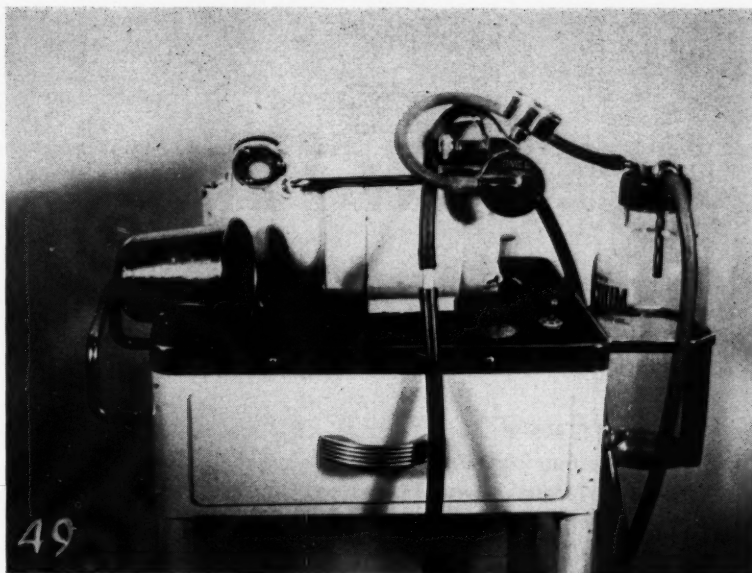
Adamantinoma of the Jaw

The clinical features observed in 17 patients with adamantinoma of the jaw have been observed. The youngest was 15 months old, and as the duration at that time was 10 months, the disease had started in this patient at the age of 5 months. The oldest patient was 36 years old, and 11 were below the age of 20.

Average Duration—Almost all of the patients came from the middle or lower class. The duration of the tumor varied from two and one-half months to six years.

Symptoms Noted—The maxilla was involved in 3 and the mandible in 14.

(Continued on page 554)



A Simplified LEAD SHIELD for Gonadal Protection in DENTAL RADIOGRAPHY

MANUEL I. WEISMAN, D.D.S., Augusta, Georgia

DIGEST

It is possible to fabricate a simple lead shield weighing about 3¾ pounds, but more than 1.0 millimeter of lead in thickness. This shield will cover and protect the gonadal region adequately. Step-by-step directions for constructing the shield are presented in this article.

Indications For Reduced Radiation

In today's dental practice the aim of lessening radiation to the dental patient during the taking of radiographs is greatly stressed. Among the devices employed to reduce radiation are the following:

1. Aluminum filters
2. Smaller lead diaphragms
3. Short exposure times
4. Faster films
5. Higher kilovoltages
6. Prolonged developing time

The main concern of the operator and the patient is the harmful effects of radiation to the reproductive cells.¹ Because these cells are highly sensitive to small dosages of radiation, direct protection by use of a lead apron of some type during the taking of dental radiographs would certainly be of great value. The specific patients who would benefit most from protection of this type are the following:

1. The child patient
2. The pregnant woman
3. The patient who has a history of a great deal of radiation therapy.^{2,3}
4. The "radiophobic" patient (one

who has a pronounced psychologic fear of radiography).

Lead Aprons in Use

Various types of rubberized lead aprons can be purchased which weigh as much as forty pounds and whose costs are comparatively high. For the most part the lead aprons that are obtainable are too heavy and cumbersome for the modern dental practice. According to the manufacturers, these aprons are equivalent to 0.5 millimeter of lead; they will reduce the radiation to the pelvic area by 98.5 per cent, based on 70 K.V. at 1/5 second.⁴

Technique for Construction Of A Simplified Lead Shield

1. Obtain from a sheet metal or plumbing supply house a piece of lead sheeting termed "two pound lead"; technically, this means two pounds to the square foot.

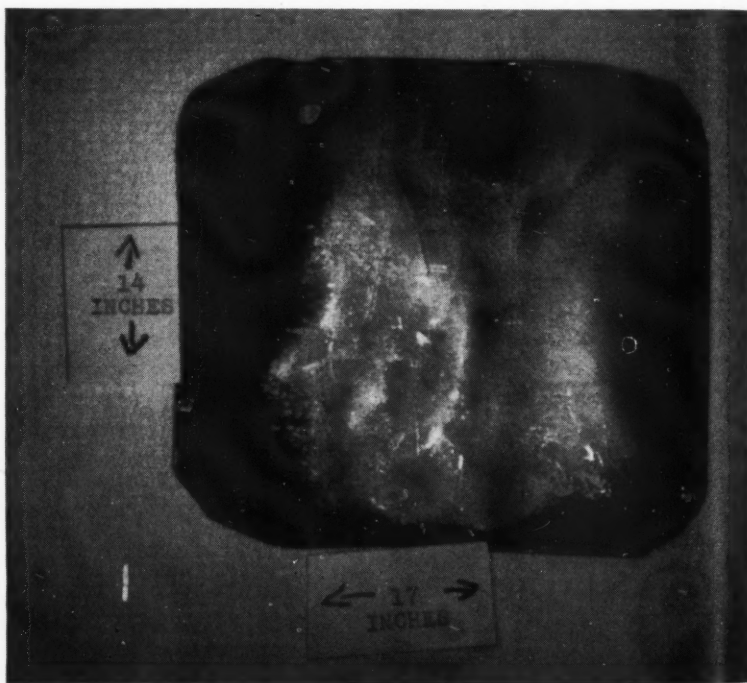
2. Trim the sheet of lead to about 14 by 17 inches and round the corners (Fig. 1). This can be done with ordinary laboratory shears. The metal is over 1.0 millimeters in thickness and weighs about 3¾ pounds.

¹Richards, A. G., et al.: X-ray Protection In the Dental Office, JADA 56:514 (April) 1958.

²A Practical Manual on the Medical and Dental Use of X-rays with Control of Radiation Hazards, The American College of Radiology, p. 23, 1958.

³McCall, J. O., and Wald, S.S.: Clinical Dental Roentgenology, Philadelphia and London, W. B. Saunders Co., 1957, pp. 108-110.

⁴Jinks, G. M.: Reduction of Radiation Dosage in Dentistry for Children, J. D. Children 26:35 (First Quarter) 1959.

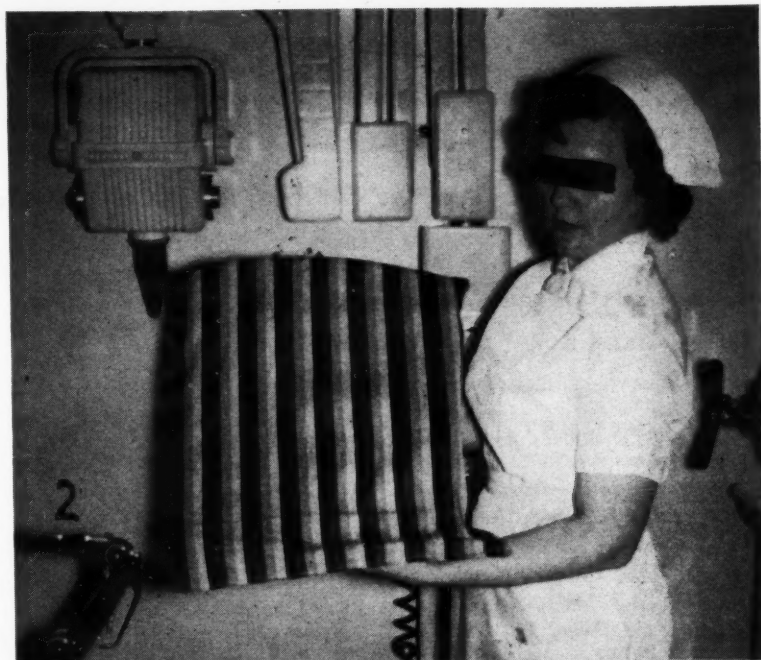


1. Lead sheeting trimmed to proper size, 17 inches by 14 inches.

2. Lead shield covered with cotton twill or duck material.

3. Shows lead shield on the lap of a child patient during x-ray exposure.

4. Shows lead shield in position while taking a dental x-ray for a pregnant patient.



3. Since lead tends to rub off on clothing and hands, a cover of heavy twill or duck material is sewed completely around it (Fig. 2). The cover will be attractive for office use. Where a large children's practice exists, a cover of Mother Goose characters can be used. The cost of the entire item should not exceed five dollars.

4. The lead shield can be fitted over the lap area of any patient since it bends easily, the child patient (Fig. 3), and the adult patient (Fig. 4), yet the shield is rigid enough so as not to slide off.

5. Since this lead cover is *twice the thickness* of the aprons now on the market for dental use, radiation effecting the gonads can be said to be non-existent, *provided all other precautions are taken.*

Summary and Conclusions

1. A simple lead shield has been presented for protection against radiation to the gonadal region of the dental patient.

2. The shield is comparatively light in weight, simple to make, easy to use, attractive in appearance, and low in cost.

3. With its use on those patients in which radiologic protection is desired to the utmost, this shield's qualities are more than adequate.

In an era of radiologic awareness, the dental profession should take every possible and practical means to protect themselves and their patients against the secondary radiation that occurs in radiographic work. Safety factors should be increased in every practical way. The simple lead shield herein described, adds a step toward complete radiologic safety.

1487 1/2 Harper Street

CRANIAL INJURIES

as a Complication of Maxillofacial Injuries

STANLEY KOGAN, D.D.S.,* Maywood, New Jersey

DIGEST

Cranial injuries occur in patients with traumatic facial injuries more commonly than the dental literature might indicate.¹ Braunstein reported that head injuries occur in 72.3 per cent of auto accidents. Of these, 10 per cent were classified as dangerous or proved fatal. In 7.7 per cent of all head injuries in this study there were skull fractures either alone or in combination with facial fractures or soft tissue injury.² This article describes the treatment in a case where a medical-dental team cooperated successfully.

Possible Complications

Problems in these cases arise primarily because the correction of facial injuries many times has to be subordinated to the treatment of the cranial injuries.³ The resultant loss in time before treatment of the facial injuries can be undertaken may dispose to infections, loss of bone, malunion or fibrous union, and further complicate the overall situation because of hemorrhage, shock, respiratory difficulty, trismus, ankylosis, or salivary fistula.

Treatment Before Diagnosis—The patient frequently presents for treatment of facial injury before the diagnosis of cranial injury has been made. The dentist must be aware of the possibility of cranial injuries even though their treatment is not within his province except for immediate first care before the specialist can take charge.⁴

Classification of Injuries—Cranial injuries may be placed in the following categories:⁵

1. Injuries of the brain
2. Traumatic intracranial hemorrhage
3. Fractures of the skull
4. Complications from intracranial injury

Aids in Diagnosis

In all cases of cranial trauma, cranial injury should be suspected with or without loss of consciousness if the patient shows any of the following signs and symptoms: (1) irritability, (2) mild to moderate character changes, (3) transient periods of confusion, (4) vertigo and headaches, (5) epileptic seizures, (6) drowsiness, or (7) amnesia.⁶

Other Symptoms—Changes in pulse rate and blood pressure, changes in respiration, progressive dilation of the pupil and fixation to light, extensor rigidity and stiff neck will often suggest the site of injury.

Additional Aids—Radiographic studies, cerebral spinal fluid examination, and electroencephalograms are necessary for final diagnosis in many cases.⁷

Cooperation in Treatment

The procedure employed in treatment of a mandibular and cranial fracture occurring in the same patient illustrates the advantage of the medical-dental team working on a common problem.

The Dental View—One method is shown of overcoming the disadvantage of utilizing general anesthesia in a patient with cranial damage by substituting an intraoral open reduction under block and infiltration local anesthesia.⁸ This type of procedure

is well documented in the literature; its interest here is that by its use a case of mandibular fracture was treated which otherwise would have been even further delayed.

Premedication—Of value in this case was the utilization of hydroxyzine pamoate,** a psychotherapeutic agent, as premedication.

Depressant Agents Contraindicated—Sedatives and narcotics as well as general anesthetics are generally contraindicated in cases of cranial damage because of their respiratory and cardiovascular depressant actions.

Case Report

A 67-year-old Caucasian man in a comatose state was brought to the emergency room of the Jersey City Medical Center by the police. Shortly after arriving, the patient regained consciousness and was able to talk, but with difficulty. The patient had been on a drinking spree during which he had either fainted, fallen, or had been struck.

Temporary Diagnosis—(1) Fractured mandible. (2) Acute alcoholic intoxication.

Oral Surgery Admission Informa-

*Resident, Oral Surgery, Jersey City Medical Center.

**Marketed as Vistaril® by Pfizer Laboratories.

¹Bradley, James L., and Jakulis, Stanley: Head Injury with Fracture of the Mandible, *Oral Surg., Oral Med., Oral Path.* 10:470-474 (May) 1957.

²Braunstein, Paul W.: Medical Aspects of Automotive Crash Injury Research, *JAMA* 163:249-255 (January) 1957.

³Clark, Henry B., Jr.: Practical Oral Surgery, Philadelphia, Lea and Febiger, 1955, p. 312.

⁴Owens, N., and Gomey, M.: Immediate Treatment of Traumatic Injuries of the Face, *Journal Internat. Coll. Surgeons* 27:273-284 (March) 1957.

⁵Moseley, H. F.: Textbook of Surgery, ed. 2, St. Louis, C. V. Mosby Company, 1955, pp. 234-246.

⁶Yater, Wallace Mason: Fundamentals of Internal Medicine, New York, Appleton-Century Crofts, Inc., 1949, p. 1050.

⁷Shackelford, John H.: Immediate Care of Maxillary and Facial Injuries, *D. Clin. North America*, Philadelphia, W. B. Saunders Company, 1957, pp. 557-571.

⁸Thoma, Kurt H.: Oral Surgery, ed. 3, St. Louis, C. V. Mosby Company, 1958, p. 438.

tion—The patient was able to speak but he was not fully oriented. He stated that he did not know whether he had been hit or not. Oral examination revealed a simple fracture anterior to the angle of the mandible on the right side. There was a buccal displacement of the posterior fragment with medial displacement of the anterior fragment. There was a second mandibular simple fracture through the left mental area without displacement. The patient was completely edentulous and had never worn dentures.

Medical Consultation—A consultation was requested because skull x-rays revealed large linear fracture. The patient appeared slightly lethargic. The vital signs were within normal limits. No hemorrhage or papilledema was seen in fundi. No blood or cerebral spinal fluid was noted in either auditory canal or nares. It would seem that with a fractured skull and a fractured mandible plus the background of alcoholic intoxication, the main problem was neurosurgical. The patient should be observed for subdural hematoma. (Patient transferred to Surgical Service.)

X-ray Report—"The skull in various positions reveals a linear fracture at the posterior aspect of the parietal area on the right side. The fracture extends from the sella turcica backwards to the area where the lamboid suture meets the coronal suture. There is no depression evident."

Surgical Admission—Basically, the patient showed some retrograde amnesia and some slowing of responses with no obvious paralysis.

Diagnosis—Fractured skull and cerebral concussion.

The Recommendation — Patient should be under observation for complications of the skull fracture. The correction of the mandibular fracture should be deferred for the present.

Oral Surgery

Resident's Notation—The fracture on the right side is displaced and will need an open reduction for correction.

Medical clearance to proceed with reduction, fixation, and immobilization at the earliest possible time is requested since prognosis for good union is reduced the longer the correction is deferred.

Surgical Resident's Notation—Temperature, pulse, respiration are normal. Patient complains of headache. No abnormal neurologic signs. Permission granted for reduction of fractured mandible under local anesthesia only.

Operative Summary—The following steps were taken:

1. An intraoral periosteal flap was raised over the crest of the mandibular ridge on the right just anterior to the angle.

2. The tissue was elevated through periosteum revealing the two fragments. The area was heavily fibrosed.

3. Each fragment was curetted and freshened.

4. Holes were made with a bone drill through each fragment and 020 gauge stainless steel wire was passed through each hole.

5. The fragments were manipulated into place and then fixed by tightening the transosseous wires. The tissue was closed with 000 silk, interrupted sutures.

Praenesthetic Evaluation—The patient is "skeptical" of procedure, afraid it is going to be painful. The patient answers questions as to occupation, family, past diseases, and accident experiences clearly and concisely. However, details relating to present accident are hazy.

Preoperative Medication—75 milligrams hydroxyzine pamoate was administered intramuscularly. Blood pressure 126/78 and pulse 84 (reclining). Blood pressure 122/84 and pulse 90 (sitting).

Postoperative Evaluation—The patient states that the only discomfort was during the manipulation of the fragments. The patient is not tired nor was there any discussion of fatigue during the entire procedure even though the mouth was open for most of the one hour and twenty-five minutes.

Discussion

Cases of multiple injuries in the same patient are an everyday occurrence. Cases of cranial trauma with transitory or long-lasting effect coupled with maxillofacial injuries are also a common occurrence. The case presented here illustrates such a problem.

The early treatment of maxillofacial injuries is a well-established principle for the same reasons that all injuries are best handled early plus those additional reasons peculiar to this region; namely, psychogenic, esthetic, and functional. Nevertheless, there are mitigating factors which alter and influence the instigation of early treatment, such as shock, hemorrhage, and cranial injury.

The decision to defer definitive treatment pending clarification of all vital functions is a medical decision. The dentist must alter the preferred mode of treatment in many of the cases where complicating medical conditions exist.

Summary

The case of a mandibular and cranial fracture occurring in the same patient which was successfully treated with an intraoral open reduction under local anesthesia has been presented because it points up some of the difficulties in treatment of these common cases.⁹ A discussion of signs and symptoms of cranial injuries was included because the dentist many times will be called upon to treat a case of facial injury in which a concomitant cranial injury exists. The successful use of a tranquilizer as premedication in this case is of interest not only because of its great advantage in cases where either premedicants are contraindicated but also because of the increased interest by the dental professions in tranquilizers as a group.

110 Locust Drive

⁹Huebsch, Raymond F.: Planning for Good Results in Maxillofacial Fractures. D. Clin. North America, Philadelphia, W. B. Saunders Company, 1957, pp. 452-457.

Surgical ***Reduction*** ***of Fracture*** ***in*** **EDENTULOUS** **MANDIBLE**

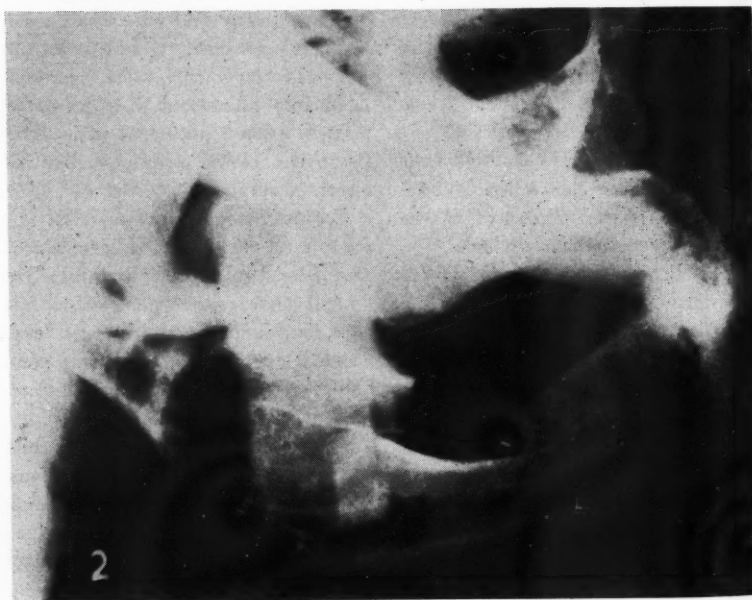
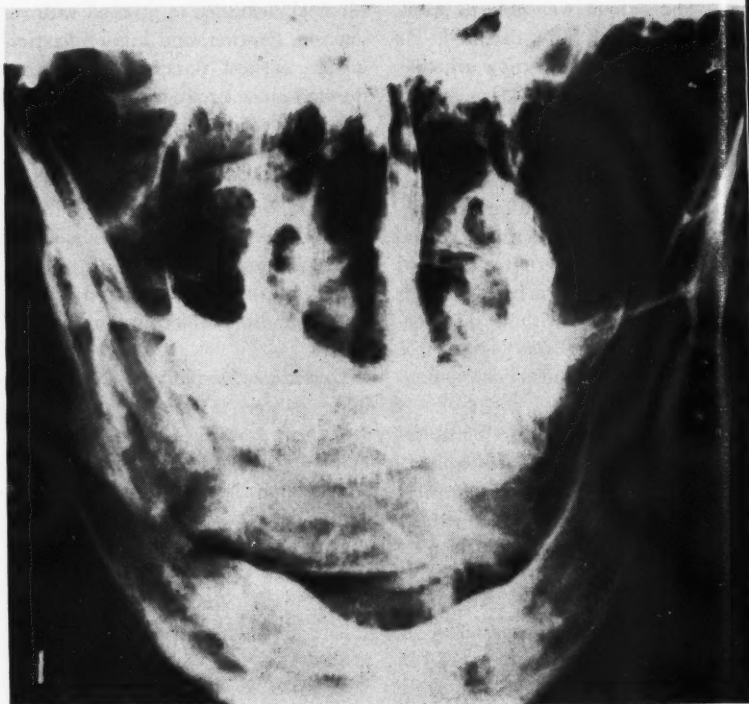
ROBERT A. ATTERBURY, B.S., D.D.S.*,
and SUNDER J. VAZIRANI, D.D.S.,
M.S.***, Chicago

DIGEST

Fractures of the edentulous mandible which tend toward displacement and cannot be corrected by intermaxillary wiring should be reduced with open reduction by a surgical approach. Although the value of this method has been challenged on occasion, the case history presented in this article demonstrates that in a certain type of fracture the method is extremely useful.

*Clinical Assistant Professor of Oral and Maxillofacial Surgery, University of Illinois Research and Educational Hospitals.

**Instructor in Oral and Maxillofacial Surgery and Assistant in Anatomy, University of Illinois Research and Educational Hospitals.



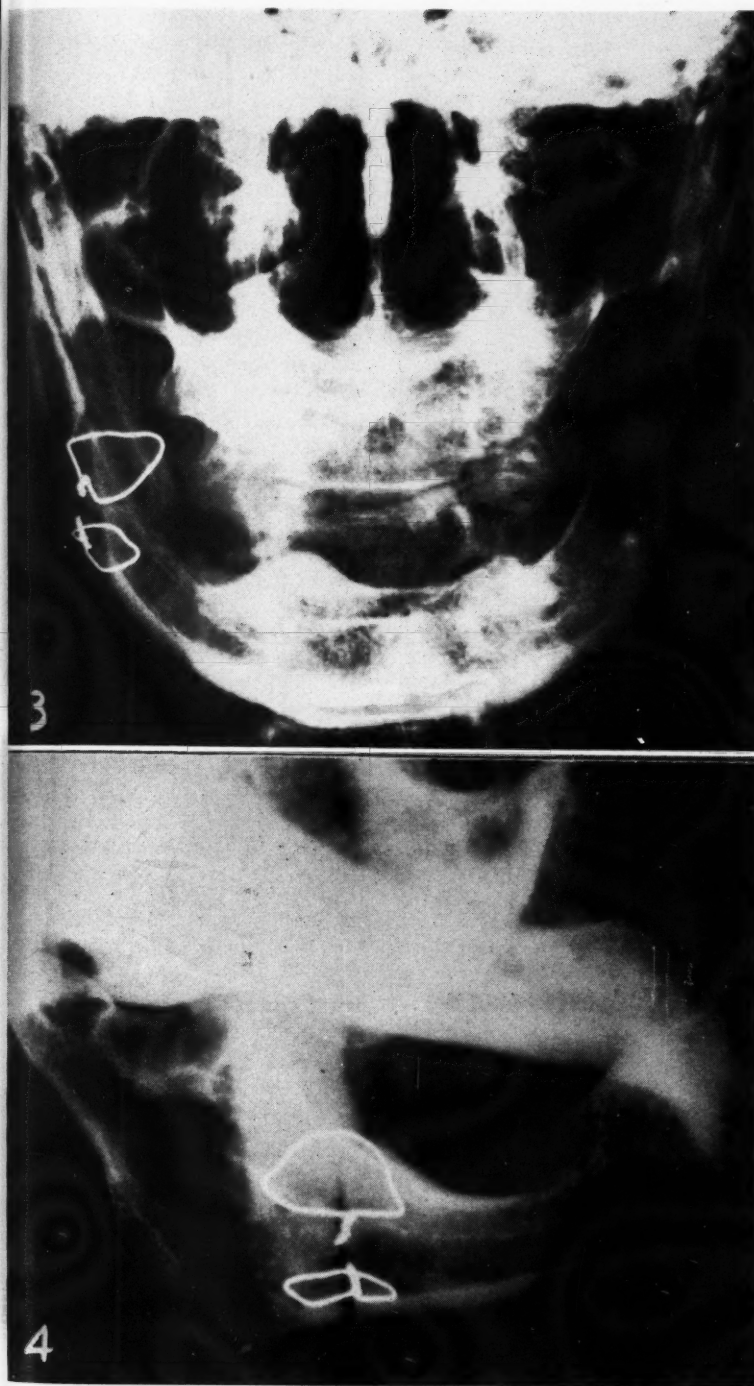
1 and 2.

Anterior-posterior and oblique views of the mandible show a fracture of the right edentulous mandible with medial displacement of the distal fragment.

Advantages of Method

Internal wiring is particularly useful for fractures with displacement at the angle of the mandible; it is preferred for the following reasons:

- (1) It provides a more positive reduction and fixation.
- (2) The patient can be discharged to return to normal life earlier.
- (3) The patient does not have to



3 and 4.
Anterior-posterior and oblique views of the mandible demonstrate postoperative reduction of the mandibular fracture with interosseous wire fixation.

wear an uncomfortable appliance on his jaw and face.

(4) The possibility of inadequate approximation of the fractured seg-

ments with pin fixation is eliminated.

(5) Tantalum wire is biologically inert and therefore need not be removed.

(6) The risk of osteomyelitis is greatly reduced since the advent of the use of antibiotics.

(7) The result obtained in open reduction far outweighs the defect caused by an external incision, a defect which can be avoided if the incision is correctly placed and closed in accordance with the accepted principles of plastic surgery. This results in a fine, pencil-line scar which is barely visible.

Case History

The following case illustrates the use of internal wiring fixation with open reduction and an overall management of the patient.

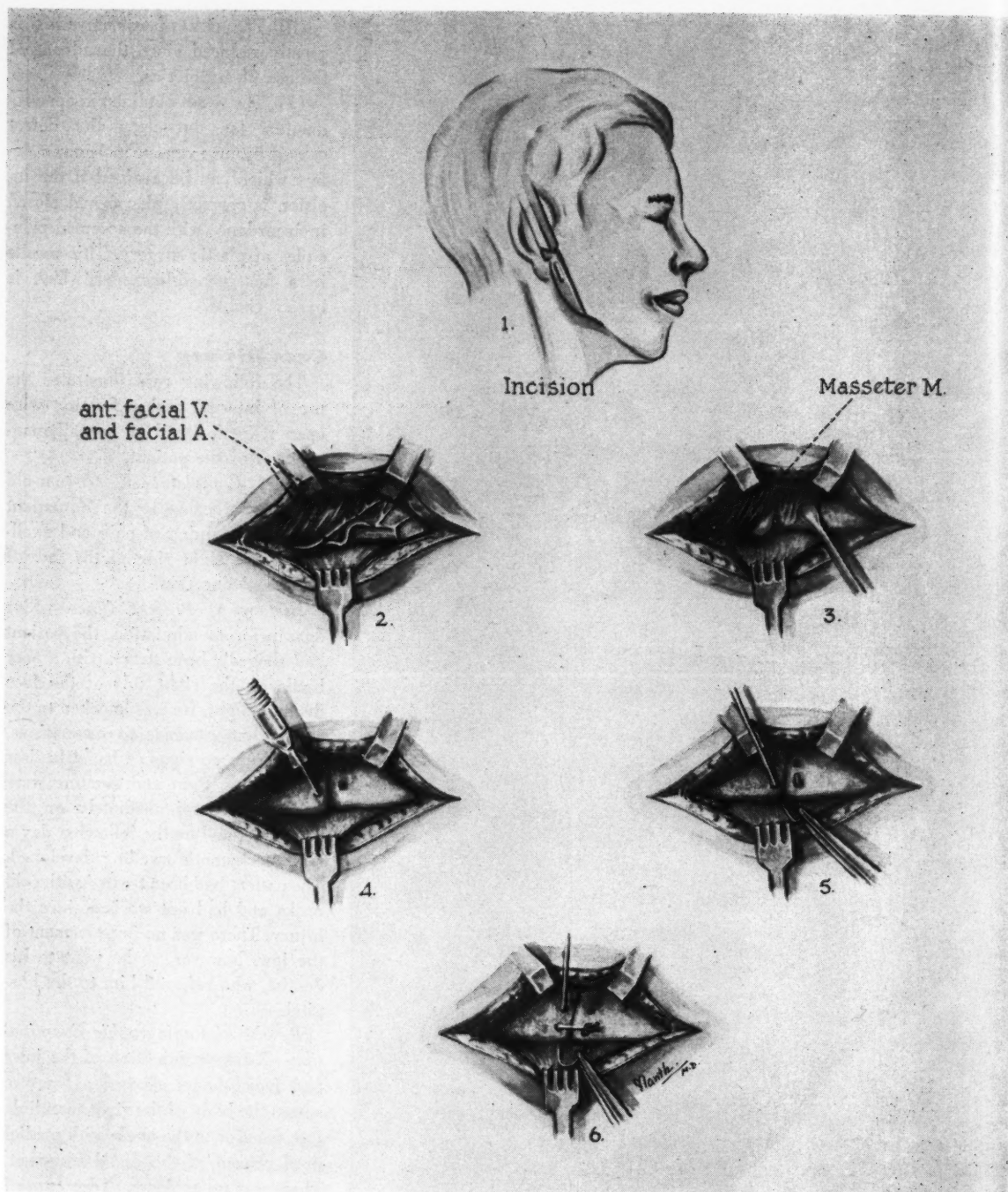
Chief Complaint—A 61-year-old Negro man came to the outpatient clinic complaining of pain and swelling of the right side of the jaw of five days' duration.

History of Present Illness—Five days prior to admission, the patient had allegedly been struck with a beer bottle on the right side of the face during a fight. He was knocked to the ground but not rendered unconscious. There were no signs of facial bruises or bleeding. Pain and swelling were noticed almost immediately on the right side, and on the following day a large ecchymotic swelling developed. The patient had been treated with cold packs and had not worked since the injury. There was no improvement of the jaw, however, so he went to his dentist, who referred him to the hospital.

Results of Radiographic Examination—X-ray examination of the jaws and facial bones showed a fracture across the body of the right mandible just anterior to the angle with medial displacement of the distal fragment. There was no evidence of fracture of the zygoma or other facial bones (Figs. 1 and 2). Diagnosis was a fracture of the right mandible at the angle with considerable displacement.

Treatment and Course

The patient was admitted to the hospital for open reduction of the mandibular fracture. On admission the patient was placed on a high-calorie, high vitamin, soft diet, and antibiotic



therapy, using an intramuscular injection of 600,000 units of Abbocillin® penicillin daily for five days.

The routine laboratory data of blood, urine, and serology were essentially negative.

Surgical Steps

The operation was performed two days after admission, under local anes-

Diagrams 1, 2, 3, 4, 5, and 6. illustrate a surgical technique of open reduction of mandibular fracture.

thesia with mandibular block and local infiltration using 1 per cent Primacaine®. The preoperative medication consisted of 1/6 grain of morphine and 1/150 grain of atropine. The following steps were taken:

1. After careful preparation of the skin by the usual method, the fracture was palpated with digital examination. With a No. 15 Bard-Parker blade, an incision was made in the skin below the mandible (Diagram 1), extending from the angle of the jaw about halfway along the horizontal ramus, approximately 3 centimeters long.

2. The skin, subcutaneous tissue, and the platysma were divided.

3. The anterior facial vein and artery were located and preserved by careful retraction (Diagram 2).

4. The masseter and internal pterygoid muscles were exposed by blunt dissection and the periosteum was incised (Diagram 3).

5. Two fracture fragments were visualized. The posterior fragment was medial, upward, and forward, and the anterior fragment was more lateral. Abnormal muscle pull and considerable displacement were noted. Since this fracture was one week old, the fracture ends were curetted with No. 2-0 and No. 3-0 curets. The margins of these fragments were freshened and approximated.

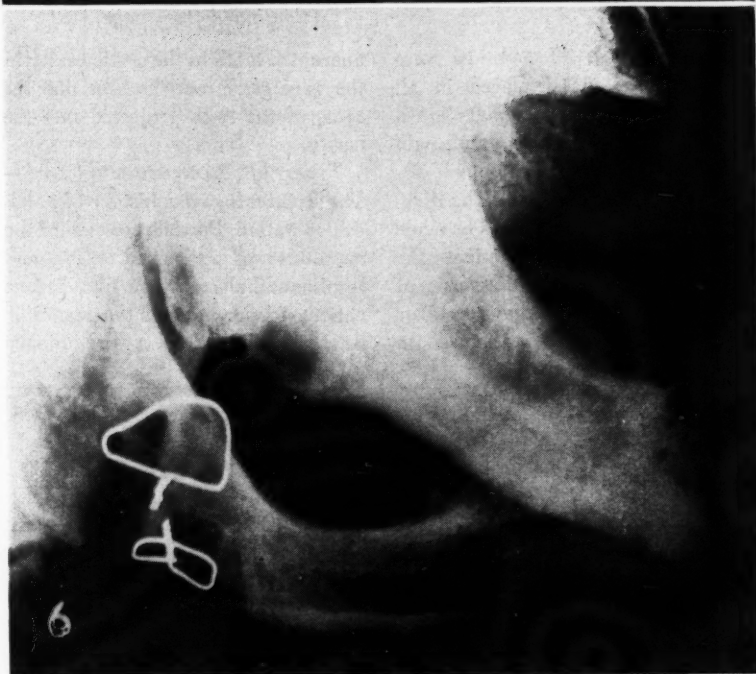
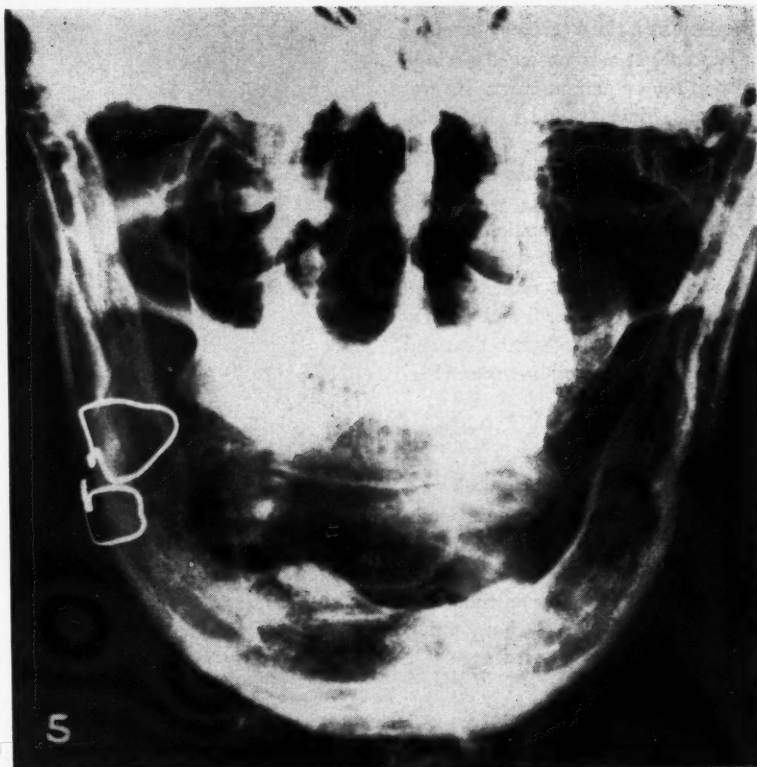
6. Using a hand drill, four holes were made, two in each fragment and about 0.5 centimeter away from the fracture line (Diagram 4). The fracture was then immobilized by the insertion of two interosseous 0.020 tantalum wires (Diagrams 5 and 6).

7. The periosteum, muscles, and fascia were closed with 3-0 plain catgut and the skin with No. 5-0 dermalon subcuticular suture. A dry sterile pressure dressing was applied with a Barton bandage.

8. The patient tolerated this procedure satisfactorily and was returned to the ward in good condition.

Recovery Normal—On the first postoperative day the patient showed a slight elevation in temperature to 101 degrees Fahrenheit, without an increase in respiration or pulse rate. On the following day the temperature was normal, and a normal postoperative period ensued, aided by penicillin therapy, cold compresses, bed rest, sedation, and an adequate fluid intake. On the third postoperative day, he had an uneventful recovery and was allowed to be out of bed.

Reduction Successful—The dressing was changed on the third postoperative day, and the subcuticular suture was removed on the fifth day. An adhesive tape was used in butterfly fashion to prevent scarring. The postoperative x-rays were taken at this time (five days after surgery) and showed good reduction of the right



5 and 6.

The follow-up roentgenographic examination shows a perfect reduction and good bony union.

mandibular fracture with wire fixation. The fracture line is visible (Figs. 3 and 4).

The patient was discharged on the sixth postoperative day.

(Continued on page 554)

Postoperative Observation

The patient was observed periodically in the outpatient clinic. He was examined clinically and radiographically every three weeks. Clinical examination two years later showed a solidly healed mandible with good function. Roentgenographic examination verified this clinical impression and showed a perfect reduction and excellent union (Figs. 5 and 6). Esthetically, the result was excellent and revealed a fine, pencil-line scar (Fig. 7).

Summary

The mandibular fracture in an edentulous patient, which was complicated by lack of dentures, displacement of the fragments, and swelling, required an extraoral open reduction of the fracture. Excellent bony union and function were achieved.

840 South Wood Street



7.

Clinical view reveals a fine, pencil-line scar and excellent result.

Adamantinoma of the Jaw

(Continued from page 545)

The teeth of the affected jaw were missing, loose, or displaced in all while ulceration and secondary infection, purulent discharge, and pain were present in nine.

Variation in Diagnosis—The diagnosis of adamantinoma could be made radiologically in only six patients, the others had a mistaken diagnosis of osteoclastoma, dentigerous cyst, or dental cyst. Three patients showed an

unerupted tooth in the cystic cavity in the roentgenogram, and in one the roots of the teeth projected into the cavity.

Types of Treatment Preferred—Three patients gave a history of previous operation. Partial resection of the mandible was performed on one and hemimandibulectomy on five. In one patient 75 per cent of the mandible was removed after a preliminary

course of deep x-ray therapy. Resection of the maxilla with suprahyoid dissection of the lymph nodes was performed on one patient. Curettage was performed on six, all of whom had cysts. In four the lesion was too advanced for operation and palliative deep x-ray therapy was given.

Adapted from Foreign Letters, *Journal of the American Medical Association* 169:151 (Jan. 1) 1959.

An Invitation to Contributors:

Since 1894 when DENTAL DIGEST was founded the pages of this journal have been open to articles contributed by dentists throughout the world. The emphasis has been, and will continue to be, on the publication of articles on all phases of clinical practice.

DENTAL DIGEST encourages the use of many illustrations to show techniques. We prefer that the text be short and that step-by-step tech-

nical procedures be presented as an illustrated "clinic on paper."

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Why publish? Any dentist who has developed a technique, refined a procedure, or has made a significant clinical observation has the opportunity to record these advancements and elevate his profes-

sional standing by making a contribution to the literature.

* * *

For all illustrated articles that appear in DENTAL DIGEST the author will receive an honorarium of \$50 to help defray his expense in preparing the photography or drawings.

Contributors are invited to send their articles to:

Edward J. Ryan, D.D.S.
Editor, DENTAL DIGEST
708 Church Street
Evanston, Illinois

A Method of Localizing ROOT TIPS and FOREIGN BODIES

MORTON MALKIN, D.D.S., Long Island City, New York

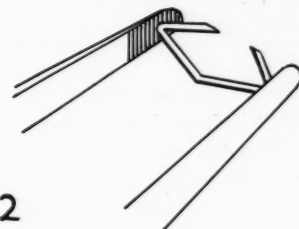
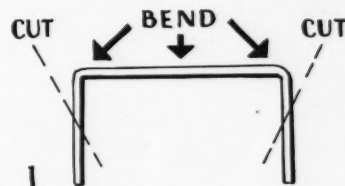
DIGEST

One of the problems occasionally encountered by the dentist is that of removal of particles from the jaws and associated structures. These may be foreign bodies or areas of diseased tissue such as retained roots, cysts, and neoplasms. Often they are below the intact mucosa and are only revealed by radiographs. This article describes in particular a method of localizing an embedded foreign element in the jaw tissue.

Localization of Object Necessary

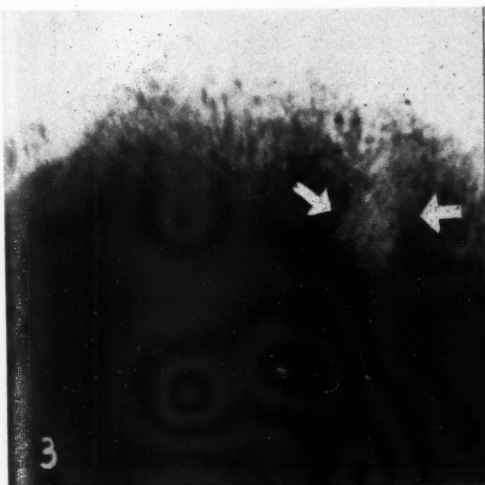
In order to facilitate removal of a particular foreign body, the object must be localized in three dimensions. Various radiographic techniques for such localization have been described.^{1,2,3,4} When teeth are present near the area they may be an aid in determining the exact position. If teeth are not present, some other point of reference must be used.

Devices in Use—Various radiopaque instruments have commonly been introduced into the soft tissue



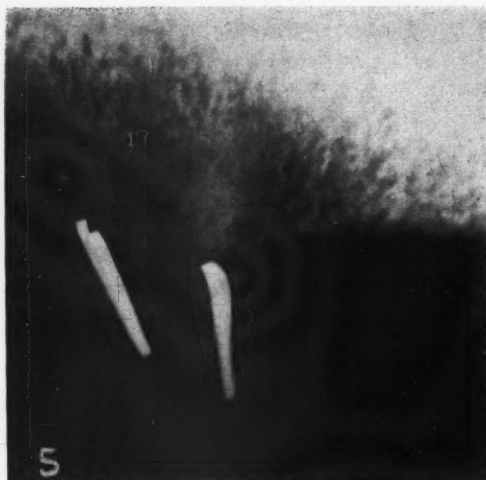
1. Shows the preparation of an ordinary staple to be used as a radiopaque guide in the location of a foreign body in the jaw.

2. Shows the prepared staple held on a tissue forcep for placement in the soft tissue.

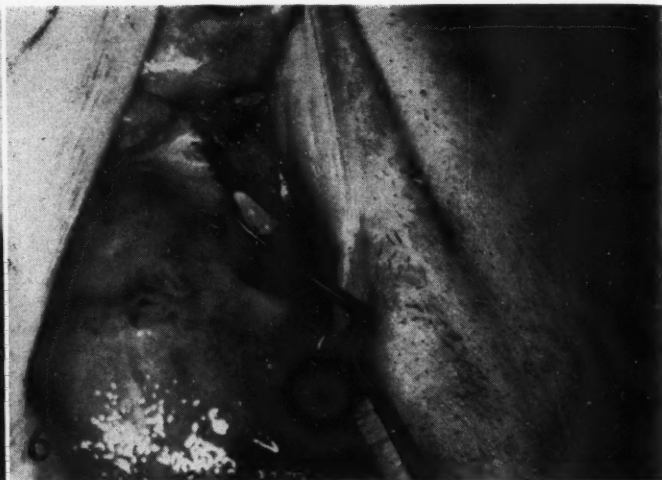


3. An embedded root fragment.

4. Two staples in position in the area of the submerged root.



5.
An x-ray that shows the position of the two staples in relation to the retained root.



6.
The delivery of the root fragment.

for the desired localization on x-ray film.^{4,5,6,7} These include the following: 1) Suture needles, 2) root canal files, 3) straight pins, 4) surgical skin clips, 5) fine wire, 6) wire mesh, and 7) pins embedded in wax.

There are disadvantages, however, to each of these mechanical devices.

Ideal Requirements—An ideal device for this purpose should have the following qualities:

1. It should be easily inserted into and removed from the soft tissue
2. It should not be easily dislodged
3. It should not injure the tissue
4. It should not interfere with x-ray film placement
5. It must be thin and radiopaque
6. It must be sterilizable

Procedure

Such an ideal instrument may be contrived from an ordinary staple by bending it in the middle and cutting the ends at an oblique angle to form points (Fig. 1). The following steps may be taken:

1. The staple is placed with a plain

tissue forceps after local anesthesia is given (Fig. 2).

2. An x-ray is taken, the staple is removed, and the reference point maintained by putting a suture through the precisely determined spot in the surgical flap. This suture can also be used for retraction.

Figures 3, 4, 5, and 6 illustrate a typical case of localization and removal of a retained root tip.

Summary

A method is described and illustrated for the simple and adequate localization of nonvisible bodies in the jaw tissue by means of a prepared, ordinary staple.

30-13 Steinway Street

¹Fleming, W. E.: Retained Tooth Roots, Australian D. J. 50:148, 252, 310 (July, Sept., Nov.) 1946.

²Salman, I., and Langel, I.: Foreign Bodies, O. Surg., O. Med., and O. Path. 6:1165 (Oct.) 1953.

³Smith, I. M.: Foreign Bodies in Dental Practice, J. Michigan D. A. 30:293 (Oct.) 1956.

⁴MacDonald, D. M.: The Removal of Retained Roots, D. Practitioner 2:172 (Feb.) 1952.

⁵Bourgoyne, J. R.: Unusual Operations—Locating an Embedded Root Tip, D. Items Interest 68:649 (July) 1946.

⁶Wakefield, B. J.: Removal of Retained Roots and Foreign Bodies, O. Surg., O. Med., & O. Path. 3:591 (May) 1950.

⁷Roistacher, S. L.; Fearing, S.; and Berns, J. M.: A Method of Localization of a Foreign Body in the Facial Region, O. Surg., O. Med., and O. Path. 8:973 (Sept.) 1955.

Definitions of Cerebral Anoxia

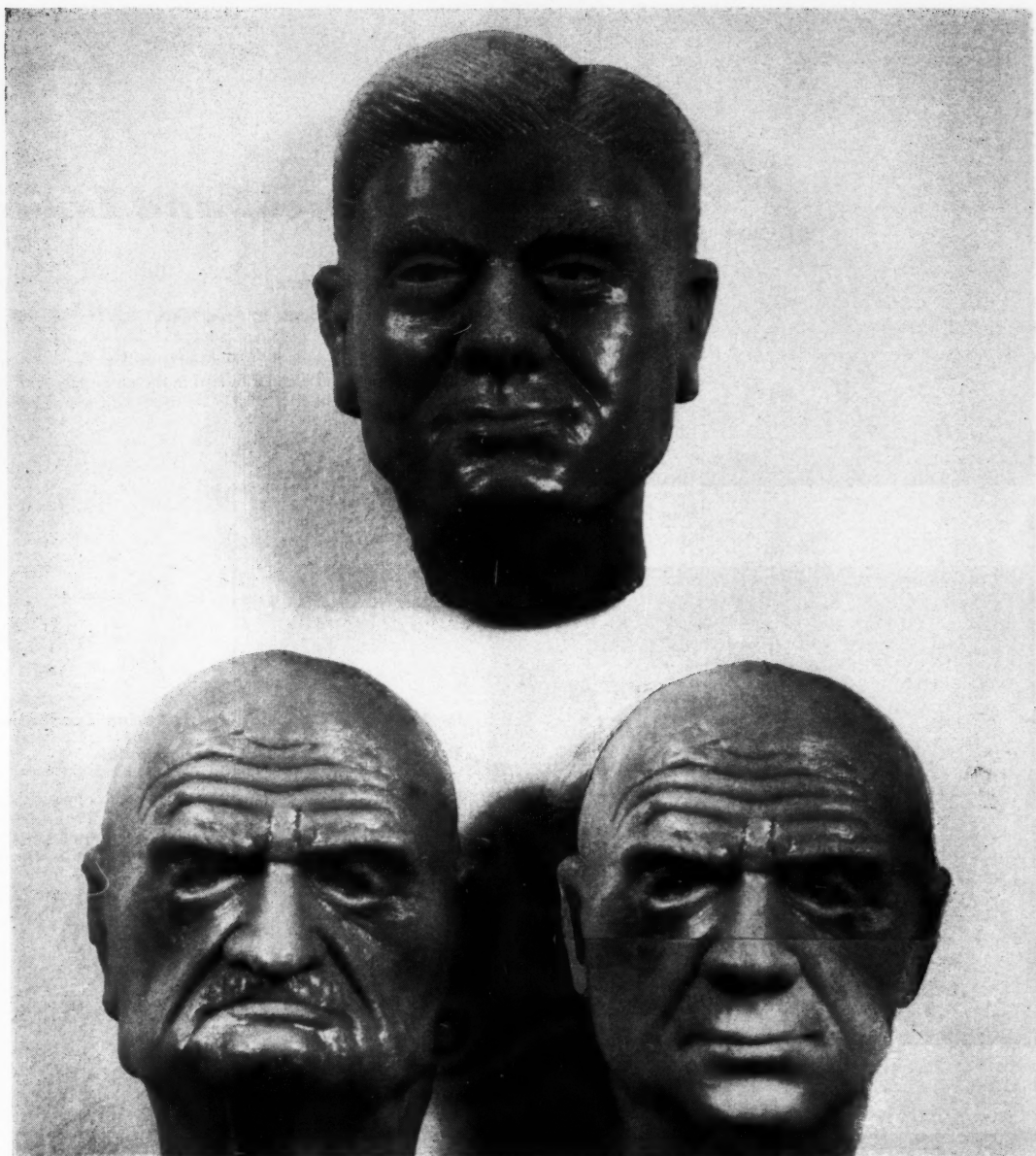
Syncope—Loss of consciousness due to acute decrease in cerebral blood flow. Cerebral blood flow depends mainly on arterial blood pressure. Arterial blood pressure is the product of cardiac output and peripheral resistance. Therefore the two main causes of syncope are (a) sudden drop in cardiac output, (b) sudden decrease in peripheral

resistance. Fainting is the commonest cause of b.

Fainting—A vaso-vagal reflex peculiar to man and characterized by slowing of the heart and a precipitous fall in blood pressure mainly caused by a sudden decrease in peripheral resistance. This fainting is but one kind of syncope.

Vaso-Vagal—A term coined by Sir Thomas Lewis in 1918 to describe the common fainting attack. He considered the slowing of the heart to be due to a reflex action by a vagal element, rather than being solely a cardiac effect.

From Society for the Advancement of Anesthesia in Dentistry, Report of Meeting (Dec. 15) 1958.



The TEETH

and the FACE

VICTOR H. SEARS, D.D.S.,
Vallejo, California

There are some things a dentist can do to improve facial appearance, and other things he cannot do. These pictures show the possibilities.

The top head represents a man at age 40.

The two lower heads show how the same man might look at age 80.

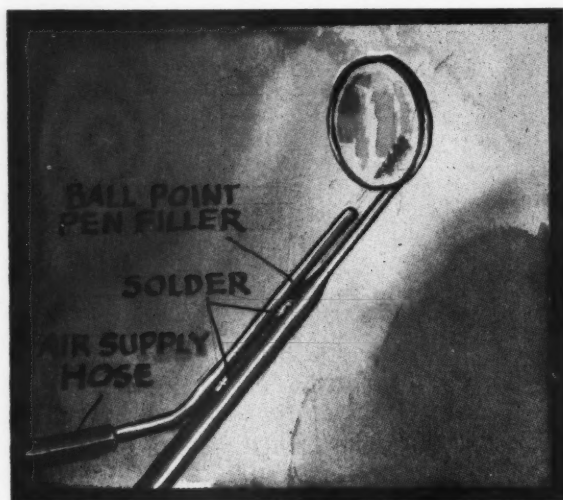
The head on the left indicates the characteristic changes that occur with the passing of time when natural teeth wear and allow the lower jaw to drift out of its normal position. Similar changes occur with dentures that have

settled too much and outserved their time.

While it is seldom possible to bring about so great a change as that shown in this case, the head on the right demonstrates the kind of improvement in appearance the dentist can make with the suitable restoration of teeth.

Note that the upper part of the head is not changed at all, but that the alteration in the lower half produces a more pleasing and more youthful appearance.

646 Washington Street



1

Clinical and Laboratory

Water-Spray Mirror

Robert F. Bernal, D.D.S., El Paso, Texas

1. A cleaned tube portion from a ball point pen soldered to a brass mirror handle and attached to the air supply with rubber tubing creates a mirror that may be used with a water-spray.



2

Protection of Opposing Teeth During Exodontia

Richard T. Matousek, D.D.S., Apple Creek, Ohio

2. Before removing upper teeth cover the opposing lower teeth with several 2 by 2 exodontia sponges and hold the gauze in place with a dual saliva ejector. This cushion will protect the teeth from injury should the forceps slip.



3

X-ray Film Mounting

D. Robertson-Ritchie, H.D.D. (Edin.), L.D.S. (Eng.), Chichester, Sussex, England

3. When taking full mouth x-rays place all the left side films in one envelope and all the right side in another envelope. This separation of the films will facilitate mounting.

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You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

X-ray Processing

Edward M. Werfel, D.D.S., Springfield, New Jersey

4. Mount a box of "pigeon holes" on the wall above the x-ray processing tank. Label the slots for the days of the week. Place the exposed films in the slot that corresponds with the day when the films will be needed.

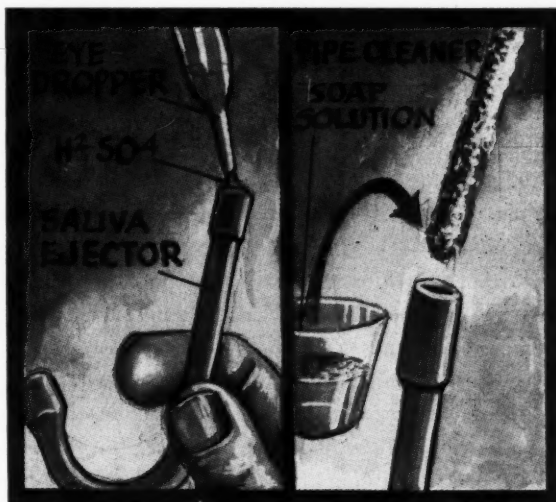


4

To Clean Saliva Ejector

Dwight T. Barcroft, D.D.S., Chicago, Illinois

5. Place a few drops of sulphuric acid in the saliva ejector with an eye dropper. Rinse well in running water and then run a pipe cleaner, dipped in a soap solution, through the saliva ejector.

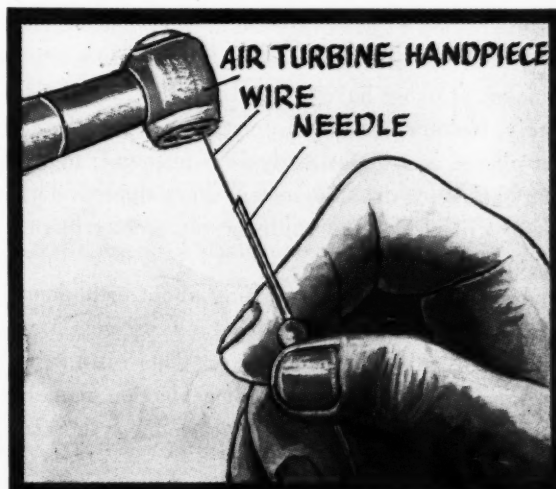


5

Cleaning Air-Turbine

Martin W. Miller, D.D.S., Chester, Pennsylvania

6. Use the wire from a syringe needle to clean the clogged air and water spray holes in the air-turbine handpiece.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S Page

EVERY clinician who has lived and practiced long enough can recall techniques and therapies that have been introduced with great expectations, were used with enthusiasm for a time, then passed into the limbo of forgotten things. Progress is a faltering process; it is not a straight or continuous trajectory. Progress comes out of trial and error from experimentation; it is born of disappointment and frustration.

Wilson¹ has described the four stages in scientific developments: "In medicine and dentistry, attitudes toward new therapies seem to demonstrate a familiar pattern: (1) the period of discovery, (2) a period of widespread and indiscriminate use, (3) a period of agonizing reappraisal, and (4) the period when true value is determined with limitations and dangers fully understood, and selective discriminate use is practiced."

The "test of time" will remain the most eloquent testimonial to the effectiveness of any treatment procedure. Open-mindedness is a virtue of both the intellect and the emotions. It should not be confused with impulsiveness, which is entirely of the emotions. Before we accept any new therapy we should apply the test of reasonableness: Is it based on a sound premise? Is objective evidence presented? Has it been used long enough? Are the case reports sufficient in number and kind?

The four stages in development of a scientific concept described by Wilson are familiar to all of us. In the period of discovery we have either accepted a procedure with more enthusiasm than critical judgement or we have ignored the development entirely. Neither one of these extremes is admirable. To plunge in without analysis is unsound; to turn our back on a development is short sighted. Time alone will record the value in any treatment procedure.

Although Wilson was writing about orthodontic treatment this philosophy that he expresses is applicable to any form of therapy: "There is another limiting factor in our search for perfection, namely, the problem of mechanotherapy. No one system has

a priority on perfection. Each of us can adhere strictly to a system of orthodontic mechanics and produce satisfactory results in a group of cases that is tailor-made for the system. This accounts for the many fine results obtained by orthodontists using different appliances which vary from the most simple to the multibanded devices. However, applying a system to the infinite variety and broad spectrum of orthodontic problems is futile. This truth becomes increasingly evident to the orthodontist after his five-or-ten-year honeymoon with such a system.

"For a long time we have predicated our treatment planning on limitations of our mechanotherapy. Many cases that required extraction have been expanded because the appliance was not adapted to the problems of space management. This is an inherent weakness of some of the simple orthodontic appliances. There are multiple deficiencies in the multibanded appliances. They are not well adapted to transitional treatment. The necessity for awaiting full eruption sometimes permits a marked worsening of the malocclusion to occur. The multiple thicknesses of twenty-four or twenty-eight bands, each with two interproximal thicknesses of metal and cement, require several millimeters of space for mere placing of the appliance. In some instances, this is more space than would be required for treating the case if such an appliance were not used. Additional arch increase under these conditions is difficult. There have been many needless extractions just to accommodate the appliance . . .

"There is no reason to believe that knowledge and personal skills have not kept pace with appliance development and that notable areas of usable treatment possibilities remain untapped."

The "untapped" possibilities of treatment should enlist our interest. Such developments as implant dentures and high-speed cutting instruments came because somebody was not satisfied with the procedures in use. Because we have used a therapy with success is no evidence that it cannot be improved. The thrust of progress requires that we search constantly for instruments, techniques, and drugs that will make dental treatment easier to perform, more successful, and available to more people.

¹Wilson, William L.: The Development of a Treatment Plan in the Light of One's Concept of Treatment Objectives, *Am. J. Orthodontics* 45:572 (August) 1959.



Mumps— Immunization

During the first few months of life, mumps is an extremely rare infection, even when there is intimate exposure. The resistance of the infant is probably not due to transplacentally acquired antibodies.

Gamma globulin prepared from plasma gathered from the population at large is completely without value against the risk of this infection. Only the gamma globulin prepared from plasma of those who have been hyperimmunized against mumps virus has any probable protective effect. This effect is at best unpredictable and not reliable.

After exposure to mumps there is no satisfactory method of protection. Susceptibility may be determined by means of the skin test with material prepared from the virus grown on embryonated eggs. The tuberculin reaction-like positive response is supposed to indicate the probability of previous infection and immunity. Negative tests are inconclusive.

Some degree of passive immunity against mumps may be conferred by the use of hyperimmune gamma globulin, which is commercially available. It is impossible to evaluate this protection adequately.

The communicability of mumps is relatively low. About one-third of the adult population is thought to be immune because of previous undiagnosed and perhaps subclinical infection. Apparently successful protection may simply be the result of residual immunity in the subject or of insufficient exposure. Failures are encountered when susceptibility is accompanied with intimate exposure.

Active immunity against mumps may be induced by two injections of the commercially available vaccine which has been cultured on embryonated eggs. This immunity cannot be induced in the interval between exposure and the appearance of the disease. For this reason it does not provide the greatest potential usefulness for a method of active immunization. In some cases it is necessary

MEDICINE

and the Biologic Sciences



to repeat immunization annually.

Children who are exposed to mumps should be allowed to develop the disease. In fact, little can be done to prevent this should one choose to do so. There is much less likelihood of infection after mumps exposure than is the case with measles or chickenpox. Probably the low order of communicability accounts for the fact that so many adults escape the disease during childhood only to develop it in later years. Orchitis and oophoritis rarely develop before puberty and the other complications of mumps which may occur in childhood are not usually of great severity.

Deliberate exposure of the child may be desirable as the only means of inducing lifelong immunity. However, this introduces the potential risk of secondarily exposing adults who may then have the illness with greater severity and sometimes with permanent sequelae. It is desirable that the child acquire this infection before puberty as the best source of permanent immunity and the prevention of the disease during adult years.

Shaw, Edward B.: *Mumps Immunization*, JAMA 167:1744 (August 2) 1958.



Rachitic Disorders

Rickets is a relatively rare disease today. It is wise to keep it in mind, however, when considering the growth and development problems of children. Also, its bearing on mineralization of tissues in elderly persons is important, especially in prosthetic procedures.

Inadequate calcification of cartilage and osteoid tissue is often due to renal or gastrointestinal disease rather than to insufficient intake of vitamin D. Renal tubular defects, glomerular insufficiency, and steatorrhea with decreased absorption of vitamin D and calcium lead to disturbances in calcium and phosphorus metabolism. This is the basis of rickets.

The commonest form of rickets now seen is a congenital hereditary disorder in which excessive amounts of phosphorus are lost, presumably as a result of an enzymatic deficiency of the renal tubules. Phosphorus is not reabsorbed after passing through the glomeruli. Bone lesions appear to be the result of low serum phosphorus.

The disease affects males particularly and is apparently a sex-linked dominant. The heterozygous female, and members of the family with biochemical stigmata may have no significant signs of disease.

Intravenous administration of phosphates brings about rapid healing of the bone lesions. Vitamin D in doses of 50,000 to 100,000 units appears to increase renal tubular absorption of phosphorus. The serum phosphorus level rises slightly.

Aminoaciduric rickets is also due to a renal tubular defect that interferes with normal reabsorption of phosphorus and other solutes. Acidosis may coexist. Therapy includes large doses of vitamin D, correction of acidosis, and replacement of potassium.

Rickets is often severe with hyperchloremic acidosis, which may be hereditary or due to an acquired renal tubular lesion. Because of defec-

tive hydrogen ion substitution, sodium is lost in amounts that are high in relation to chloride. Chronic acidosis leads to excessive excretion of calcium in the urine. Correction of acidosis by sodium and potassium citrate reverses the rachitic changes and nephrocalcinosis.

Renal rickets is associated with chronic glomerular insufficiency, azotemia, and hyperphosphatemia. Acidosis appears to be the basis for the failure in mineralization.

Diseases that manifest steatorrhea (celiac disease, cystic fibrosis of the pancreas, and congenital atresia of the bile tracts) result in rachitic changes due to inadequate absorption of vitamin D and calcium. With celiac disease and cystic fibrosis of the pancreas, rachitic changes are rarely significant when water-miscible vitamin D is used. However, rickets associated with atresia of the bile ducts is one of the most advanced forms of the disease and even large doses of vitamin D given parenterally have only slight effects.

Cooke, Robert E.: *Modern-day Rickets, Pennsylvania M. J.* 60:1559-1564 (December) 1957.



Glaucoma

Glaucoma is found in 1 in 50 persons over 40 years of age. Of those afflicted 1 in 10 is blind as a result. Treatment is mandatory as it can be stated that almost all untreated cases will go on to loss of useful vision. If treatment is begun early, the prognosis is good.

The condition is usually associated with almost any elevations in intraocular pressure due to an impairment in the mechanism of escape of aqueous humor. Congenital glaucoma occurs once in every 2,000 births. Juvenile glaucoma, occurring after infancy and up to the age of 35, is rare. Myopia generally develops in this type. The incidence of glaucoma rises gradually toward the age of 40, after which there is a sudden increase. The number of cases is greatest between 60 and 70 years of age, after which the condition is less common.

Males constitute two-thirds of the patients with congenital glaucoma. Both eyes are afflicted in three-fourths of all subjects. The disease exists at birth or occurs shortly after in about 40 per cent of patients and rises one to six months after birth in about 50 per cent.

In adults, glaucoma is either the acute painful type that occurs as a red eye and causes notable loss of vision or the insidious chronic type that robs the eye of all useful vision. Both types are amenable to early treatment. Both progress to blindness if the pressure is allowed to remain elevated. Also, both may be difficult to diagnose, particularly the chronic form.

The acute form, usually found in patients of 50 to 70 years of age, is characterized by an acutely inflamed eye with alarming loss of vision. Often an emotional disturbance initiates the onset. Acute glaucoma must be treated vigorously and without delay to prevent disastrous loss of vision and, if possible, to regain what vision has been lost.

Chronic glaucoma is 10 times more common than the acute form. It requires 10 times the effort and acuity to be recognized during the early stages before field loss. The family history usually reveals valuable information as there is a 10 per cent hereditary incidence. Because of the painless and insidious nature of chronic glaucoma, the patient may be aware only of a vague heavy feeling in one or both eyes, particularly in the morning or after prolonged reading. Common early signs are impairment on accommodation, transient blurring of the vision in one eye if the other is accidentally covered, and the unshakable feeling that glasses are never quite right despite frequent change of lenses. The patient must realize that, to preserve his field of vision, the instillation of miotics under the surveillance of his physician must be continued for the remainder of his life, unless, of course, another form of treatment is discovered.

MacDonald, R. Keith: *Early Recognition and Therapy of Glaucoma,*

Mod. Med. 26:149-168 (March 15) 1958.



Scurvy in Adults

Scurvy is due to prolonged and severe deficiency of vitamin C. It is rarely seen in adults. Elderly persons living alone, dieters, and food faddists are more susceptible. Frequently patients are depressed, resentful, and uncooperative.

Most patients have anorexia and aching, rheumatic pains in the legs and back. Both pain and loss of appetite are most pronounced when ecchymoses appear. The patient may be confined to bed because of lethargy. Leg stiffness, dyspnea, dry cough, and chest ache are less common symptoms.

Spontaneous bruises due to scurvy are two types: (a) small, slightly raised, painless bruises 1 to 8 centimeters in diameter, usually on the hands, arms, and legs, and (b) extensive extravasation of blood into the tissues, usually on the legs, causing purple discoloration, swelling, stiffness, and slight pain.

Absorption of extravasated blood may produce fever and jaundice. Unusual hemorrhagic manifestations include hematuria and melena. Anemia is common. Apparently the degree is not related to the amount of extravasated blood but is determined by the duration of vitamin C deficiency and the severity of scurvy. Bone marrow shows normoblastic hyperplasia. Leukocyte and platelet counts and bleeding and clotting times are normal.

Ascorbic acid, 600 milligrams daily, and a normal diet are sufficient to relieve symptoms and signs. Vitamin B complex and ferrous sulfate may also be administered. Usually subjective improvement is noted within twenty-four hours. In two or three days pain, anorexia, and lethargy diminish. Within a week, purpura and small bruises disappear and extravasated blood begins to regress.

Cutforth, Robert H.: *Adult Scurvy,* *Lancet* 1:454-456 (February) 1958.

A Stannous Fluoride-Silex-Silicone Dental Prophylaxis Paste with Anticariogenic Potentialities

V. A. SEGRETO, D.D.S., N. O. HARRIS, D.D.S., and W. R. HESTER, D.D.S.

Discussion

Used in a series of tests to determine the stability of this nonaqueous dental prophylaxis paste, the stannous fluoride-silex-silicone prophylaxis paste gave a greater protective effect to teeth subjected to the *in vitro* decalcification procedures than did a topical application of a 10 per cent stannous fluoride solution. The increase in effectiveness is possibly due to a series of concurrent and synergistic reactions:

(a) When the prophylaxis paste is used, the placement of stannous fluoride on the tooth structure and the cleaning action of the silex are simultaneous.

(b) The possibility of saliva contaminating the field is thus eliminated, and a maximum effect is ensured.

Formula of Prophylaxis Paste

Dry Ingredients—1. Silex (ground quartz) SiO_2 mesh extra fine.

2. Stannous fluoride.

3. Sucaryl® (cyclamate sodium with saccharin tablet).

Liquid Ingredients—1. Dow Corning No. 555 fluid (silicone).

2. Liquid petrolatum U.S.P. (heavy).

3. Oil of orange (concentrated).

4. Oil of anise (concentrated).

Procedure for Mixing Paste

1. Weigh and mix 2 grams each of silex and stannous fluoride, add $\frac{1}{4}$ tablet (approximately 13 milligrams) finely ground Sucaryl, and mix thoroughly.

2. For every 4 grams of the mixture of dry ingredients, add the following:

- Silicone fluid, 0.1 milliliter
- Liquid petrolatum, 0.4 milliliter
- Oil of orange 0.2 milliliter
- One drop of anise oil

Factors Contributing to Effectiveness

Silex—This ingredient appears to potentiate the protective effect of the stannous fluoride.

Liquid Petrolatum—Used as a moistening agent this ingredient increases the effectiveness of the mix.

Combination of Ingredients—Results of use are rather erratic, and it is the use of a 0.5 silicone petrolatum solution with the silex and stannous fluoride that affords a constant high protection to *in vitro* decalcification.

Tin, plus Contact Temperature—Since the silicone-petrolatum fluid alone gives little or no protection, possibly the synergistic silicone-stannous fluoride action is due to the fact that the tin, plus the contact temperature generated by the rapidly rotating rubber cup, acts to catalyze the polymerization of the silicone fluid.

High Percentage of Stannous Fluoride
(Continued on page 567)

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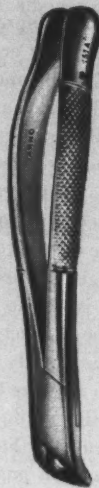
65 For all upper roots, fragments, overlapping centrals and laterals.



103 For lower centrals, laterals, bicuspid and roots. Beaks angulated to permit application to all lower anteriors and crowded teeth.



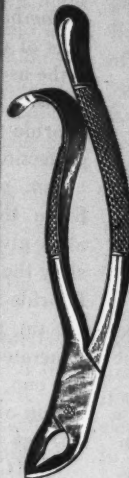
150A For upper first and second bicuspid. Parallel beaks. Modification of Cryer pattern No. 150.



151A For lower first and second bicuspid and sometimes molars. Beaks grasp almost entire lingual and buccal wall. Pressure helps pull crown into opening between beaks for secure hold.



99C For upper centrals, laterals, cuspid, first and second bicuspid. Parallel beaks.



85 For cuspid, bicuspid, molars. Sharp beak edges can be used for breaking down the lingual and buccal plates.

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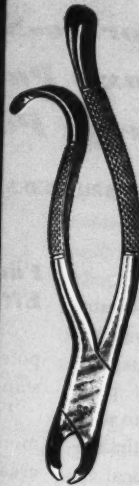
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S.S. WHITE TARNO FORCEPS



88L-2 (left) For upper molars, first and second. Modification of "cowhorn" type beaks.



15 For lower first and second molars. A universal forceps with sharp pointed beaks that deflect soft tissue without injury.



88R-2 (right) For upper molars, first and second. Modification of "cowhorn" type beaks.



16 For first and second molars, and teeth with badly broken down crowns our improved No. 16 gives amazing results.



210 For normally posed upper third molars. A universal upper forceps with hook handle.



222 For lower third molar. Beaks shaped to avoid interference by second molar. Long enough to remove teeth without or possible.

Annual Index-1959

Anatomic Reconstruction

- Cooper, Herbert K., and Millard, Robert: A Dental Approach to Speech Restoration in the Laryngectomy: A Preliminary Report, March 106
- Garn, Bernard J.: The Emotional Basis of Dentofacial Development—Part One, September 392
- Garn, Bernard J.: The Emotional Basis of Dentofacial Development—Part Two, October 453

Anesthesia

- Adriani, John: Toxicity of Local Anesthetics (An Abstract), October 459
- Hypnosis Machine (An Abstract), July 314
- Papernmaster, A. A.: A Clinical Application of Hypnoanesthesia in Dentistry—Part One, April 154
- Papernmaster, A. A.: A Clinical Application of Hypnoanesthesia in Dentistry—Part Two, May 211
- Papernmaster, A. A.: A Clinical Application of Hypnoanesthesia in Dentistry—Part Three, June 263
- Quinn, Galen W.: A Simplified Injection Technique, June 259
- Thomas, George J.: Fires and Explosions from Anesthetic Agents (An Abstract), January 21
- Weyl, Ruth; Unal, Baha; and Alper, Y.: Clinical Evaluation of a New Ultrashort-Acting Oxygen Barbiturate for Intravenous Anesthesia (An Abstract), September 428

Caries

- Egyedi, H.: The Glycogen Theory of Caries—A Method of Caries Prevention, July 311
- Segreto, V. A., et al.: A Stannous Fluoride-Silicic Acid Dental Prophylaxis Paste (An Abstract) December 563
- Sweet Tooth and Decay (An Abstract), February 62

Clinical and Laboratory Suggestions

- January
- Hubler, W. E.: Protection of Alginate. Dasent, Eugene M.: Saliva Control. Iuorno, F.: Removal of Wax Spots. Boris, Henry L.: Increasing Retention of a Gingival Inlay. Wienski, John C.: Stability of Lower Occlusion Rims. Dooreck, S. M.: A Matrix Holder. 30
- February
- Martuch, J. T.: Flaring a Copper Band. Van Blaricum, G. D.: Glazing a Facing with a Blowtorch. Clynes, J. T.: Shortening an Airtor® Bur. Herr, Harold G.: An Aid to Seating Inlays. Waldman, David: Model Identification. Bier, John Allan: Removal of Excess Cement from a Bridge. 76
- March
- Weaver, Charles A.: Tray Handles. McLaughlin, Jean: Soap Holder. Hartman, Arthur M.: Incision for an Impacted Third Molar. Wright, Francis H.: Thermometer for X-ray Processing Tank. Sakarya, Manuel: Acrylic to Hold Jacket Crown on the Preparation. Dinsdale, Rae: To Hold Clamps and Rests in Position While Processing. 128
- April
- Hallberg, F. J.: Magnet to Hold Burs. Dooreck, S. M.: Mercury Expresser. Coleman, Edwin T.: X-Raying Children. Weisman, M. I.: Full Upper Rubber Base Impression. Ban,

Thomas G.: Assuring Proper Contact Points. Flashner, Jesse: Hemorrhage Control. 176

- May
- Teddar, M. E.: Immobilizing the Tongue. McGeehan, John D.: Protection of Existing Restorations. Bernal, Robert F.: A Temporary Posterior Crown. Kent, Sanford: Cleaning Rubber Base of Silicone Impressions. Schmetter, R. L.: Mouth Mirror and Retractor. Dooreck, S. M.: Protection of Teeth During Extraction. 222

- June
- Stockton, Roger K.: Immediate Temporary Bridge. Crandall, Harold: A Technique for Large Castings. Hirsch, Davis S.: Testing Sterilizing Efficiency of Autoclave. Jorgensen, Kay: Protection of Impressions. Pedersen, R. W.: Additional Retention for a Three-quarter Crown. Parry, Thomas L.: Keeping Orthodontic Bands in Proper Order. 270

- July
- Ha, Edward, Jr.: Condensing Porce-lain. Matousek, Richard T.: Seating of Class II Inlays. Waldman, David: Protection of the Patient's Clothing. Pedersen, R. W.: Contouring Silicate Restorations. Graham, Herbert K., Jr.: Determining Freeway Space. Beamish, C. B.: Removal of Copper Band Impression. 318

- August
- Jelinek, William F.: Tooth Protection During Cavity Preparation. Adams, Richard M.: Control of Pulpal Hemorrhage. Stallings, William H.: Alginate Fill-in for Lower Impressions. Marcucci, Gerald J.: Cold Cure Acrylic Repair. Coeperman, Milton: Adapting Shellac Baseplate. Hansen, K. R.: Airtor® Maintenance. 368

- September
- Spring, Paul N.: Impressions for Full Dentures. Miller, D. K.: Prevention of Hemorrhage During Cavity Preparation. Folkers, C. E.: Dark Room Safety. Kent, Sanford: Trays for Silicone and Rubber Impressions. Westover, J. L.: Protection of a Temporary Filling. Fleisch, Louis M.: Sterilizing the Bracket Table and Cabinet Top. 412

- October
- Siepkner, Albert G., Jr.: Bitewing Modification for an Edentulous Arch. Seidenberg, S. S.: Control of Root Canal Instrumentation. Schnitman, Joseph I.: Bubble-free Inlay Investment. Gold, Carl: Positioning of Wax Bite Rims. Friedman, Paul: Protecting a Wax Pattern Before Investment. Wiesjahn, H.: Needle Storage. 462

- November
- Wilkins, W. C.: Pulp Testing with Ice. Wiland, Lawrence: Splinting with Gold Foil. Tedesco, Joseph T.: Grinding Denture Teeth. Keels, C. H., Jr.: Clasp Adjustment. Spitz, A. N.: Protection of Teeth. McCalmon, J. D.: Wax-up for Full Crown. 510

- December
- Bernal, Robert F.: Water-Spray Mirror. Matousek, Richard T.: Protection of Opposing Teeth During Exodontia. Robertson-Ritchie, D.: X-ray Film Mounting. Werfel, Edward M.: X-ray Processing. Barcroft, Dwight T.: To Clean Saliva Ejector. Miller, Martin W.: Cleaning Air Turbine. 558

Comment and Opinion

- March
- Pratt, C. W.: Honest Confession is Good for the Soul. Morvay, Leonard S.: Treatment of Aphthous Ulceration of the Mouth. Ellis, Richard M., Jr.: To Err is Human. 144

Contra-Angles

- January
- A Medical Correspondent Looks at Fluoridation 42
- February
- Laura Comes to Us 90
- March
- How Clean Does Your Office Grow? 138
- April
- Safer Foods for All 183
- May
- Emotional First Aid 233
- June
- The Manly Art and the Dental Tissues; Publish When You Can; Prone and Supine 279
- July
- Among the Masters; Another Book, Another Author 327
- August
- A New Syndrome: Television Collapse 377
- September
- Things You Learn at a Seminar; "Down with Wonderful" 420
- October
- Clinical Sense 471
- November
- Man on the Moon; Publicity; "Dentalwork" 520
- December
- Pregnancy; Physical Fitness 570

Crown and Bridge

- Bovik, Ellis G.: A Positive Technique for Gingival Retraction, May 200
- Goodman, Lawrence: Technique for a Temporary Acrylic Crown, January 27
- Rose, Harold P.: Veneer Crown with Post for Nonvital Root, October 450
- Rubinstein, Joseph: Simplified Impression Technique for Bridge and Precision Cases, October 457
- Sachs, N. J.: Hydrocolloid for Multiple Jacket Crowns, August 347
- Thomas, Coyl B.: Fixed Bridge Assembled in the Mouth—Part One, September 409
- Thomas, Coyl B.: Fixed Bridge Assembled in the Mouth—Part Two, October 417
- Thomas, Coyl B.: Fixed Bridge Assembled in the Mouth—Part Three, November 495
- Thomas, Coyl B.: Fixed Bridge Assembled in the Mouth—Part Four, December 542

Dentures, Full and Partial

- Cathcart, Jack F.: Combination Splint and Partial Denture for Mouth Reconstruction—Direct-Indirect Technique, June 266
- Chase, Wilson W.: Tray Preparation for Functional Trim of the Complete Lower Impression, February 70
- Friedman, Jay W.: Immediate Temporary Partial Denture for Esthetic Replacement of Anterior Teeth, January 22
- Frost, Joseph Stewart: Simplified Procedure for Immediate Dentures—Part One, August 358
- Frost, Joseph Stewart: Simplified Procedure for Immediate Dentures—Part Two, September 402

(Continued on page 566)

Kossoff, Alex R., and Hoffman, Max D.: An Evaluation of the Transograph, February	60
Liddelw, K. P.: The Simple All-Acrylic Partial Denture—Part One, July	302
Liddelw, K. P.: The Simple All-Acrylic Partial Denture—Part Two, August	352
MacLachlan, H. H.: An Evaluation of 2400 Cases Using Polystyrene Denture Base Material, April	166
Miller, Romie H.: The Flat Ridge and Lower Denture Retention, April	171
Mintz, Samuel: A Technique for the Determination of Vertical Dimension as an Important Step in Obtaining Centric Occlusion, February	63
Page, Harry L.: Fundamentals of Practical Articulation, June	250
Priest, Charles A.: Immediate Denture Construction Without Sutures, July	315
Sears, Victor H.: The Teeth and the Face, December	557

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Diagnosis

Flinchbaugh, Ralph W.: The Need for X-ray Study of the Edentulous Patient, July	309
Hopp, Eugene S.: Oral Diagnosis of Systemic Disease (An Abstract), January	41

Editorials

January	
Masterly Inactivity	32
February	
Principles of Retention Reviewed	78
March	
Vitamin C in Surgical Healing and as an Anticoagulant	127
April	
Broken Needle Therapy—Part One	175
May	
Broken Needle Therapy—Part Two	221
June	
Occlusal Equilibration	269
July	
Pulmonary Infarction After Dental Extraction	317
August	
High Speed	367
September	
Hyperventilation	414
October	
Anesthesia	464
November	
High Speed Procedures	509
December	
Mechano-Therapy	560

Endodontics

Berman, Martin H.: Endodontic Management of the Chronic Draining Tooth, August	344
Best, E. James, and Olsen, Norman H.: The Management of Traumatic Injuries by Replantation, July	298
Ferranti, Palmyro: Treatment of the Root Canal of an Infected Tooth in One Appointment: A Report of 340 Cases November	490
Maeth, Harry: Saving Dental Pulp with Oxytetracycline: A Preliminary Report, January	19

Fluoridation

Garcelon, Alonzo H.: Five Years' Experience with Fluoridation in Norway, Maine (An Abstract), June	258
--	-----

Medical Subjects

Abington, Robert B.: Chelating Substances in Medicine (An Abstract), April	161
Definitions of Cerebral Anoxia (An Abstract) December	556
Fainting (An Abstract), September	401
Holman, Russell L.; Enos, William F., Jr.; Beyer, James C.; and Manion, William C.: Systemic Versus Local Factors in Coronary Occlusion (An Abstract), March	141
O'Neill, Desmond: Stress and Disease: A Review of Principles (An Abstract), April	161
Plastic for Fractures (An Abstract), April	186
The Hyperventilation Syndrome (An Abstract), September	408
The Trouble with the Staphylococcus (An Abstract), January	21

Medicine and the Biological Sciences

January	
Multiple Sclerosis; Anesthesia and Operation—Preparation; Obesity; Emollient Creams; Ultrasonics	33

February

Allergy from Therapeutic Agents; Hodgkin's Disease—Features; Skin Changes from Vitamin Deficiencies; Fever; Tracheotomy; Thermotherapy; Anoxia-Developmental Defects	79
--	----

March

Peptic Ulcer; Herpes Zoster; Tumors of the Brain and Spinal Cord; Antibiotics in Geriatrics	131
---	-----

April

Failure to Gain Weight; Auto Accident Injuries; Gallstones in Young Women; Air Travel; Mongolism	178
--	-----

May

Physical Examination; Accidents; Alcoholism; Myocardial Infarction in Young Men	224
---	-----

June

Parkinson's Disease; The Severely Injured Patient; Tolerance to Alcohol and Drugs; Thrombosis of Major Veins; Cerebral Vascular Insufficiency	272
---	-----

July

Drug Therapy and Psychiatry; Temporomandibular Joint Syndrome; Hip Surgery; Burn Wounds; Endocrine Disturbances; Uterine Myomas	320
---	-----

August

Snake Bite—Treatment; Moles; Hypnosis; Home Postoperative Care; Osteoarthritis; Subacute Bacterial Endocarditis	370
---	-----

September

Athletic Injuries; Contact Lenses; Whiplash Injuries; Malignant Melanoma; Obesity	415
---	-----

October

Antibiotics in Surgery; Psychiatry in Dentistry; Allergic Problems in Dentistry; Gingival Leukoplakia; Contact Dermatitis	465
---	-----

November

Neurologic Diseases of Aging; Tests for Fluorides; Mouth Disorders of Older Persons; Bell's Palsy; Iron Deficiency	512
--	-----

December

Poison Ivy; Mumps-Immunization; Rickettsial Disorders; Glaucoma; Scurvy in adults	561
---	-----

Miscellaneous

Age and Taste Sensitivity (An Abstract), June	279
An Invitation to Contributors, October	452
Announcement of Books Received, May	210
Announcement of Books Received, October	446
Hardy, James D.: Why Do Cancer Patients Die? (An Abstract), May	210
Radio Transmission Through Dental Restorations (An Abstract), August	357
Scientists with Half-closed Minds (An Abstract), August	376
Sharpey-Schafer, E. P.; Hayter, C. J.; and Barlow, E. D.: Acute Hypotension from Fear (An Abstract), January	18
Ziskind, Eugene: Isolation Stress in Medical and Mental Illness (An Abstract), May	207

Nutrition and Health

Mayer, Jean: Nutrition (An Abstract), August	363
--	-----

Operative Dentistry

Anker, Gordon: Instrumentation for Ultrahigh Speed Techniques, February	56
Delson, Leon: A Precision Corrected Wax Indirect Inlay Impression Technique, April	159
Eberle, William Roy: Comparative Dimensional Stability and Versatility	

of Rubber Base Impression Materials, December	536
Ewen, S. J., and Tascher, P. J.: Clinical Uses of the Ultrasonic Root Sealers (An Abstract), February	92
Ormes, Walter M., Jr.: A Self-Cleaning Dental Mirror (An Abstract), January	29
Phillips, Ralph W.: An Evaluation of the Problem of Galvanic Currents in the Oral Cavity (An Abstract), February	67
Sprague, Boyd F.: Saliva, Blood, and Dental Sludge Control in Dentistry, May	203
Susman, H. S.: Bleaching Excessively Fluorosed Anterior Teeth, June	248

Oral Pathology

Adamantinoma of the Jaw (An Abstract) December	545
Behrman, Stanley J.; Fater, Stanton B.; and Grodberg, David L.: Treatment of Gingival Inflammation (An Abstract), May	207
Brill, Niels, and Björn, Hilding: Passage of Tissue Fluid into Gingival Pockets (An Abstract), October	446
Cheraskin, E.: Oral Manifestations of Systemic Disease (An Abstract), August	355
Eskin, Louis Charles: Capillary Hemangioma of the Gingiva; Case Report, February	73
Lactobacillus Therapy of Aphthous Ulcers (An Abstract), August	346
Pigmentation of the Oral Tissue (An Abstract), August	376
Spies, Tom D.: Diagnostic Significance of Lesions Affecting Oral Tissues (An Abstract), June	265
Treiger, Norman; Taylor, Grantley W.; and Weisberger, David: The Significance of Liver Dysfunction in Mouth Cancer (An Abstract), June	262

Oral Reconstruction

Bovik, Ellis G.: Occlusal Equilibration for the General Practitioner, January	12
---	----

Oral Surgery

Atterbury, Robert: Mandibular Sequestration in Osteomyelitis, June	255
Atterbury, Robert A. and Vazirani, Sunder J.: Surgical Reduction of Fracture in Edentulous Mandible, December	550
Chamberlain, Digby, and Addison, N. V.: Scurvy After Bilateral Adrenalectomy (An Abstract), October	456
Erich, John B.: Severe Protrusion of the Mandible: Surgical Correction, April	162
Godwin, Julius G.: Surgery of the Pterygomandibular Fold, May	214
Ihrig, Harry K.: Portable Steam Sterilizer, February	68
Kogan, Stanley: Cranial Lesions as a Complication of Maxillofacial Injuries, December	548
Innerfeld, Irving: Edema Incident to Surgical Procedures (An Abstract), October	419
Malkin, Morton: A Method of Localizing Root Tips and Foreign Bodies, McDonough, Francis J.: Surgical Flaps and Incisions, October	463
Moojen de Oliveira, Virgilio: Plastic Implant in Correction of Alveolar Depression, January	24
Oral Surgery after Adrenalectomy (An Abstract), May	220
Pekarsky, Robert L.: Surgical Extension of Buccal and Lingual Folds for Greater Denture Retention, August	364
Postlewait, et al., Wound Healing: An	

Evaluation of Surgical Suture Material (An Abstract) December	541
---	-----

Orthodontics

Bergman, Clarence L.: Correction of Posterior Unilateral Cross Bite by the General Practitioner, October	440
Escoe, Raphael: Immediate Direct Space Maintainers, March	118

Periodontics

Gerber, Irving A.: Periodontal Disease as Viewed by the French Stomatologists, September	398
--	-----

Restorative Dentistry

Brenner, Edley O.: Contact Point Gauge as Applied to Cast Restorations, March	106
Friedman, Jay W.: Fixed Porcelain Restorations After Alveoplasty, September	405
Wilhelmy, Glenn E.: Cavity Preparation Under General Anesthesia in a Hospital, March	122

Roentgenography

Norwood, W. Daggett: Common Sense Approach to the Problem of Genetic Hazard Due to Diagnostic Radiology (An Abstract), February	96
Radiation Hazards Resulting from the Use of Dental X-ray Machines (An Abstract), February	72
Weisman, Manuel I.: A Simplified Lead Shield for Gonadal Protection in Dental Radiography, December	546

Therapeutics

Goldberg, Fred Allen: The Maxillary Occlusal Rim as a Basis for the Design of Intraoral Radium Applicators, May	208
Lefkowitz, William: The Use of Meprobamate Before Operative Procedures: A Preliminary Report (An Abstract), July	310
Rankin, Kenneth R.: Clinical Impressions of a New Analgesic Combination, August	356
Sargent, William: Sedatives and Tranquilizers (An Abstract), August	357
Tranquilizers in Dentistry (An Abstract), July	316

(Continued from page 563)
ride Necessary for Maximum Effectiveness—Any reduction of the percentage of stannous fluoride in the paste below a concentration of a 5:3 ratio is followed by a decrease in the protective effect.

Additional Agent in Prophylactic Treatment—Future use of this paste should not obviate the requirement for a topical application of a 10 per cent solution of stannous fluoride. The paste is intended to be used in the cleaning and polishing phase of the prophylactic treatment as another method of decreasing the solubility of the tooth surface. Thus, with no additional time or manpower requirements, the benefits derived from the use of the stannous fluoride-silex-silicone dental prophylaxis paste can augment those of the subsequent stan-

nous fluoride application so that maximum protective effect is obtained.

Summary

1. A stannous fluoride-silex-silicone dental prophylaxis paste has been formulated that more effectively inhibits *in vitro* solubility of phosphorus of tooth structure than does a 10 per cent stannous fluoride topical application.
2. The contained silex, which acts as an abrasive, does not react with any of the other ingredients.
3. The silicone-petrolatum moistening agent increases the protective effect and adds stability to the mixture.
4. In a time-function study the effectiveness of the paste did not decrease over a five-week period.
5. Stannous fluoride is the salient constituent of the dental prophylaxis paste; the other components either add desirable properties or increase its effectiveness.

Adapted from Publication, *School of Aviation Medicine, United States Air Force, Brooks Air Force Base, Texas 60:11* (November) 1959.

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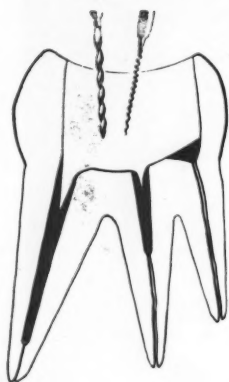
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100 diseases are classified under these ten categories on the chart

1. Diseases Due to Biologic Agents
2. Physical Agents
3. Chemical Agents
4. Neoplasms
5. Cysts
6. Hormonal Disturbances
7. Developmental Disturbances
8. Nutritional Disturbances
9. Reactions to Stress and Antigenic Substances
10. Miscellaneous Disorders

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Myths About Pregnancy

EVERY dentist has encountered pregnant women who refuse dental treatment because of the fear that some dire thing will overtake the baby in utero.

Although there may be no exact syndrome of increased incidence of dental disease during pregnancy, and the old wives' tale of "a tooth for every child" is exploded, the fact is that pregnancy may be a time when women are less careful of their mouth hygiene. If pregnancy drives women to sweet snacks at odd hours the local environmental conditions may favor the increase of caries. Morning sickness in the first trimester of pregnancy may make the woman hesitant to use a toothbrush for fear of stimulating the throat reflexes and thus induce vomiting.

There is no question that there is the entity of pregnancy gingivitis. There may also be characteristic pregnancy tumors that appear on the interdental papillae. These manifestations on the soft tissues are probably of hormonal origin and usually disappear after the baby is delivered.

The woman pregnant may be notably more emotional than in her nongravid state. This emotional instability may take the form of apprehension to the dental experience. Obstetricians are generally agreed that a noncomplicated pregnancy is not an excuse to avoid dental treatment.

The idea of "marks and signs" upon the fetus that are imprints of experiences of the woman during her term still persist in some places. A good job of debunking some of these myths was done by a mother in *Today's Health*:

"If you eat ice cream, the baby

inside of you will catch cold.

"If you want a boy, eat peanuts and alkalies; for a girl, eat sweets and acids.

"If you have heartburn, the baby will have lots of hair.

"These are just some of the old wives' tales that plague pregnant women. They exist because occasionally coincidence seemingly makes one come true, according to an article in *Today's Health*, published by the Americal Medical Association.

"Mrs. Joan S. Pollack, a University City, Missouri, mother, pointed out that the major hazard in passing on such tales is that the pregnant woman seems to be especially imaginative. She is concerned with protecting her child and is only too likely to be scared by the myths.

"Among the myths are:

"—Broad-hipped women have easier deliveries than those with narrow hips. This belief can't hurt, Mrs. Pollack noted, even though it is the internal, not external, measurements that determine ease of delivery.

"—If you eat lobster, you will mark the baby. To which, Mrs. Pollack replied, 'If I drink milk, will my baby look like a cow?'

"—the majority of markings are supposedly due to happenings late in pregnancy, yet the fetus is formed early in pregnancy.

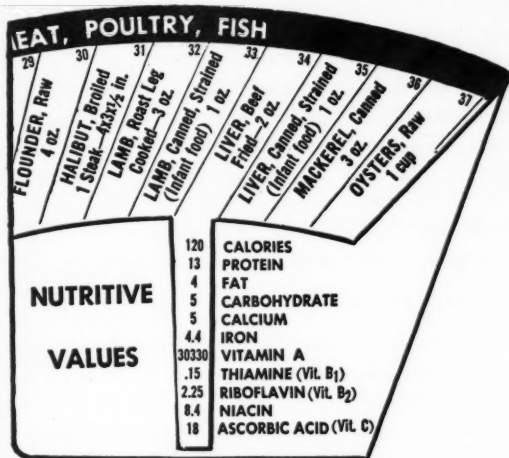
"Not only can a mother never mark her baby in a detrimental fashion, but she will only bore herself if she listens to piano recitals 10 hours a day in hopes of influencing her child to be a brilliant pianist, Mrs. Pollack noted.

"—It is safer to be born in the seventh month than the eighth month of pregnancy. This stems from an ancient Greek belief that a baby tried to get out during the seventh month and if it was strong it succeeded. If it failed and tried again the next month, it would be so tired it would die of exhaustion.

"The truth is that every day a baby remains inside the mother—up to the normal term—it gets stronger and healthier and more likely to survive.

(Continued on page 572)

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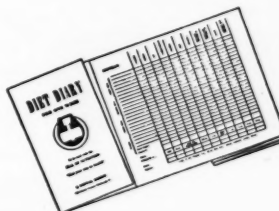


With diet the popular subject of newspaper columns, magazine articles, lectures, and books, the average layman is rapidly becoming nutrition-conscious. Unfortunately, he is also becoming nutrition-confused.

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"Several other myths about labor, refuted by Mrs. Pollock, are: the baby's head sinks to the pelvis at the dark of the moon; change of moon starts labor; girls make harder labor than boys; each person the mother talks to after labor starts prolongs the pains; if a woman has a large mouth, labor will be easy, mothers must not breathe deeply during labor since it holds the baby back."

In his role as an important health educator the dentist can do his part to debunk some of these myths. If the dentist spends more of his time talking *health subjects* to his patients (and less talk on golf, politics, and such trivia) both he and the patient will serve and be served better.

Physical Fitness— For What?

Most dentists that I know are not physically fit. Most of us eat too much, carry too much weight, exer-

cise too little. We are pale, paunchy, poor risks—a sorry lot.

It is no consolation to learn that our Air Force personnel, upon whom the future of our country depends so much, are not the class-A physical specimens that we like to think they are. The School of Aviation Medicine says this:

"During the last two or three years increasing attention has been focused on the shortcomings of 'physical fitness' of the American younger generation compared with youth of other nations. It is disappointing that during several nationwide conferences no agreement has been reached as to a clear definition of 'physical fitness.' As a consequence, studies along this line meet much controversial argumentation. Everybody delights in immediately posing the questions: Physically fit? Fit for what? For shuffling papers from one side of the desk to the other?"

"In most minds, power today rests in ideas, in motives, in organization, and above all, in technology. According to this thinking, the evolution of the human race should tend toward the development of a strictly cerebral-visceral type of man with more and more neglect of all the body parts and organs which originally were vital for survival. Unfortunately, a nation's place among the other nations and its survival in the eternal struggle between them depend largely on the general vitality of the population. History has shown that the great accomplishments of all the ancient nations were destined to perish when a peak of civilization slowly softened the physical resistance of man against the forces of nature or against the onrush of a more vital enemy. We cannot expect this pattern to change in modern times despite all technologic advancements. Unless one does not care about the destiny of future generations, conscious and sustained efforts should be made to maintain the physical capacities of man at high standards. But what are high standards or, even, what are normal standards?"

"The one physical capacity which most closely determines a man's ability to withstand a variety of functional

demands is his capacity to work. All environmental stresses, occupational difficulties, health hazards, etc., require proper functional and metabolic adjustments, but rarely to such an extent as strenuous physical work. It has been shown that work capacity can be appraised. The setting of 'standards', therefore, is only a matter of collecting the individual performance data of a large population. The experimental work of this study was a start in that direction. Although the number of approximately 500 subjects is too small to allow for establishing a definite scale of 'Work Capacity,' or 'Physical Performance Capacity,' or 'Physical Condition,' or 'Physical Fitness,' preliminary conclusions are experimentally justified. It became apparent from this study that 42 per cent of the test population had to be rated as being in 'poor' physical condition, and only 18 per cent could be rated as having a 'good' and better than good work capacity. The remaining 40 per cent constituted the population with an average capacity which was considered as 'fair.' This arbitrary rating might be disputable but at least it offers a quite sensitive and realistic approach to setting standards for 'physical fitness.' The observations made indicate: (1) the average performance capacity of individuals who live a strictly sedentary life is 'poor,' that of individuals who adhere to any type of physical activity intermittently is 'fair,' and that of regularly active individuals is 'good;' (2) in the group taking part in regular physical activity, work capacity was apparently not affected by advancing age within the range of 20 to 60 years; (3) in testing 131 officers on flying status (KC-97 training program) the incidences of 'poor physical fitness' were 39, 51, and 58 per cent, respectively, of the test results obtained from second lieutenants, first lieutenants, captains, and above. Results of experimental studies on metabolic reserves indicate that these officers would have a poor chance of survival in emergency situations requiring a higher rate of energy expenditure."

On the basis of the experimental findings it can be concluded that the
(Continued on page 576)



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Dentures Found Improved Three Ways

As expected from the preliminary research, in actual use, dentists found the new developments to be of advantage in three principal ways. This is shown in the analysis that follows of the hundreds of voluntary statements received.

(1) 46% of the statements praised the "naturalness" and "esthetics" of the new Dura-Blend developments. This validates the results of the series of detectability tests conducted at 1958 meetings of Dental Societies in which only 10.7% of the participating dentists were able to accurately distinguish Dura-Blend plastic teeth from natural teeth. (See table below.)

Meeting	No. of Participants	No. of Correct	% Correct
Boston	138	11	8.0
Buffalo	112	14	12.5
Toronto	104	13	12.5
TOTAL	354	38	10.7

Dura-Blend detectability test results. Full details may be secured by requesting Reprint DB 1

(2) 28% laid specific emphasis on advantages derived from the three new shades. Previous study had shown the augmented Dura-Blend shade guide capable of yielding first choice in match to natural teeth 44% more often than any other of the shade guides tested.

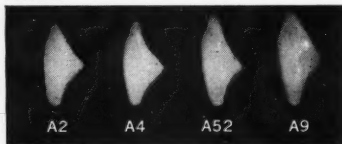


Figure 1. Slender forms, longer ridge laps typical of the new Dura-Blend moulds.

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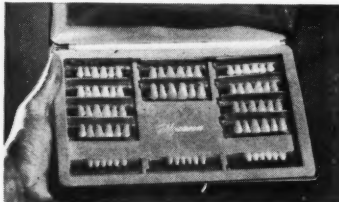


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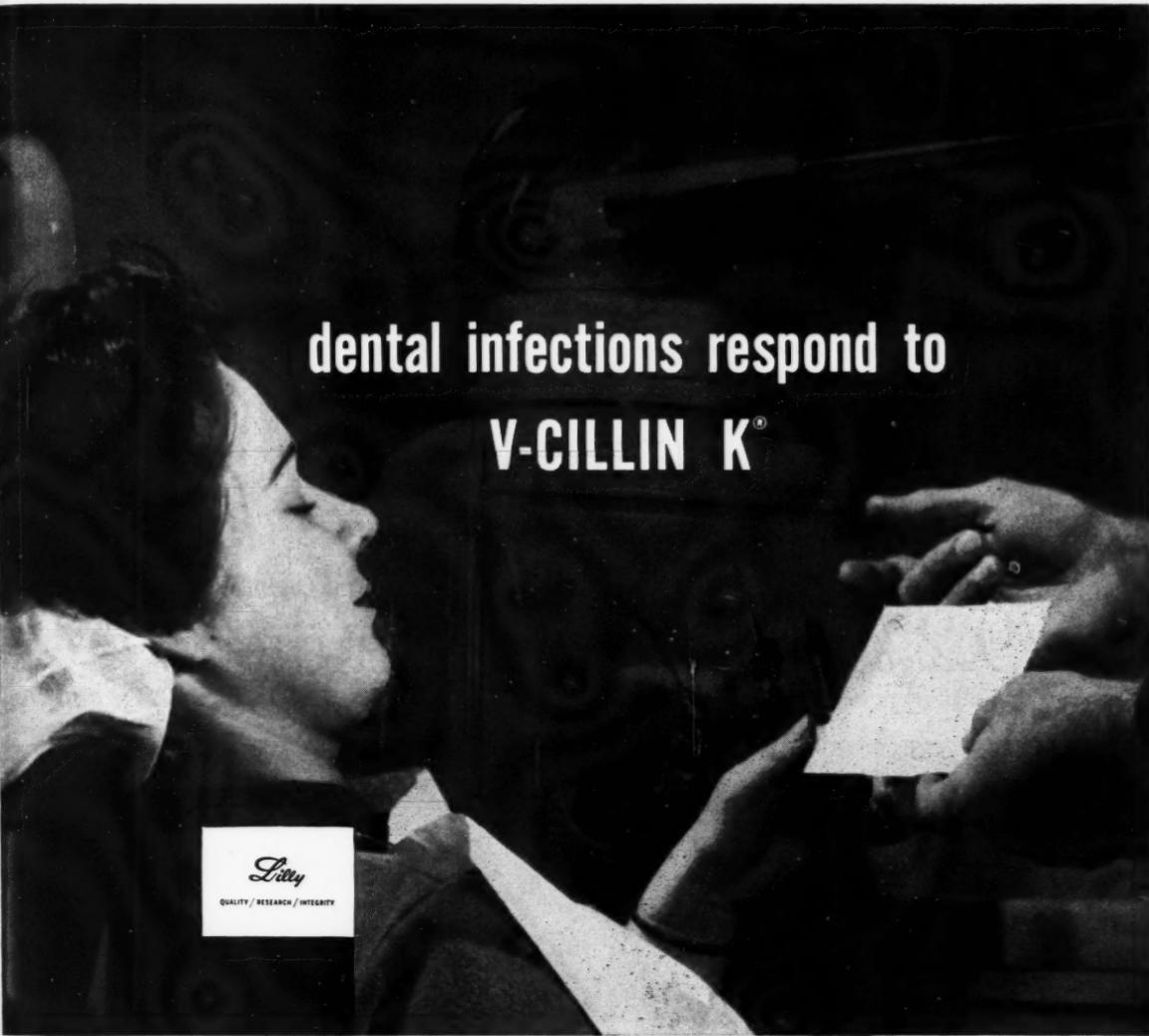
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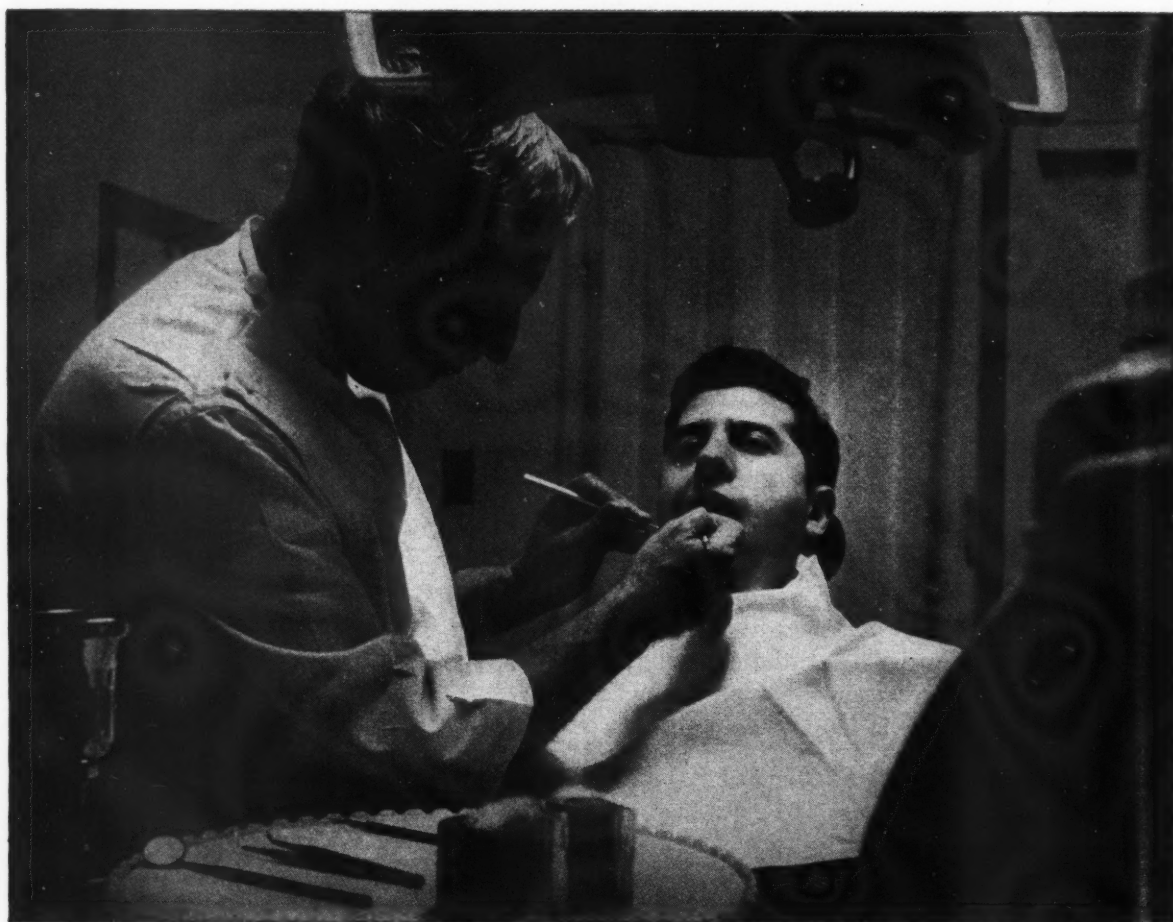
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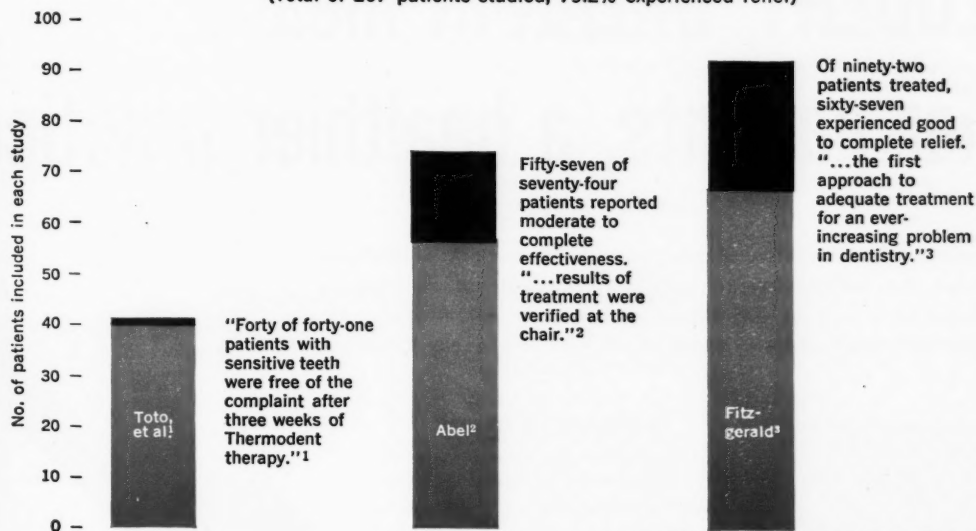
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1. Toto, P. D.; Staffileno, H., and Gargiulo, A. W.: *J. Periodontology* 29:92 (July) 1958.
2. Abel, L.: *Oral Surg.* 11:491 (May) 1958.
3. Fitzgerald, G.: *Dental Digest* 62:494 (Nov.) 1956.

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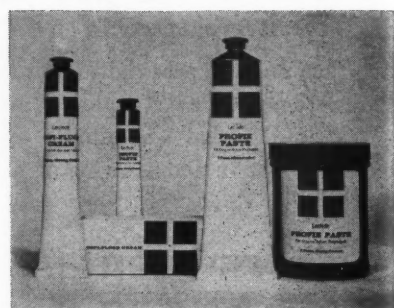
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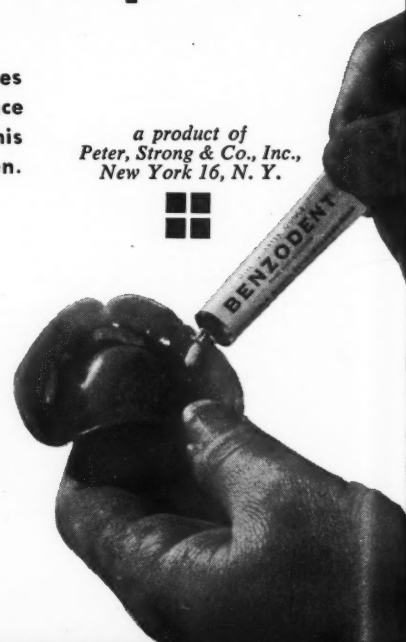
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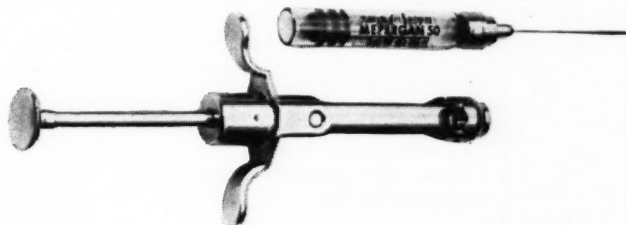


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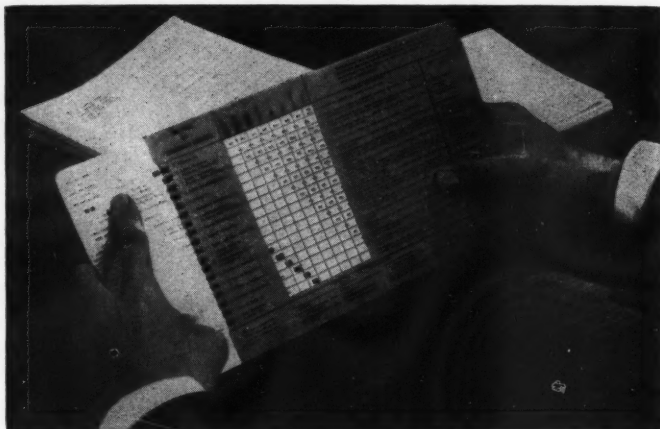
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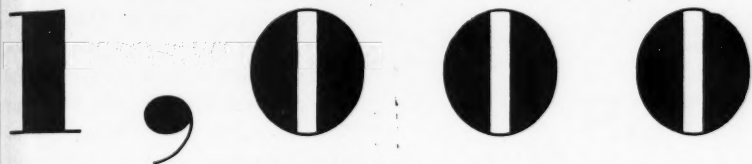
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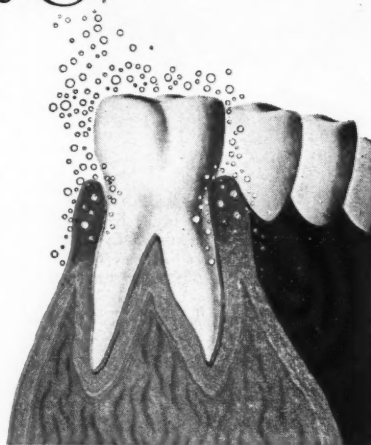
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1. *Oxygen uptake by normal and inflamed gingiva and saliva. Schrader and Schrader. Helvets. odont. acta. 1:13-16, (April) 1957.*

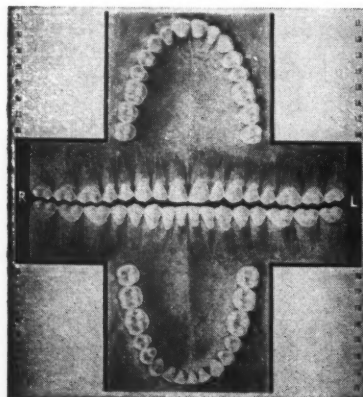
2. *Behrman, S. J.; Fater, S. B.; Grodberg, D. L.; An Evaluation of Oxygenating Agents in the Treatment of Gingival Inflammation. J. Dent. Med., (October) 1958.*

3. *The New York Hospital—Cornell Medical Center. Presented as a Scientific Exhibit at the American Dental Association Annual Session, (November) 1957.*

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overall state of "physical fitness" in Air Force personnel is "poor" and that the Air Force physical fitness program, as it now stands, is ineffective.

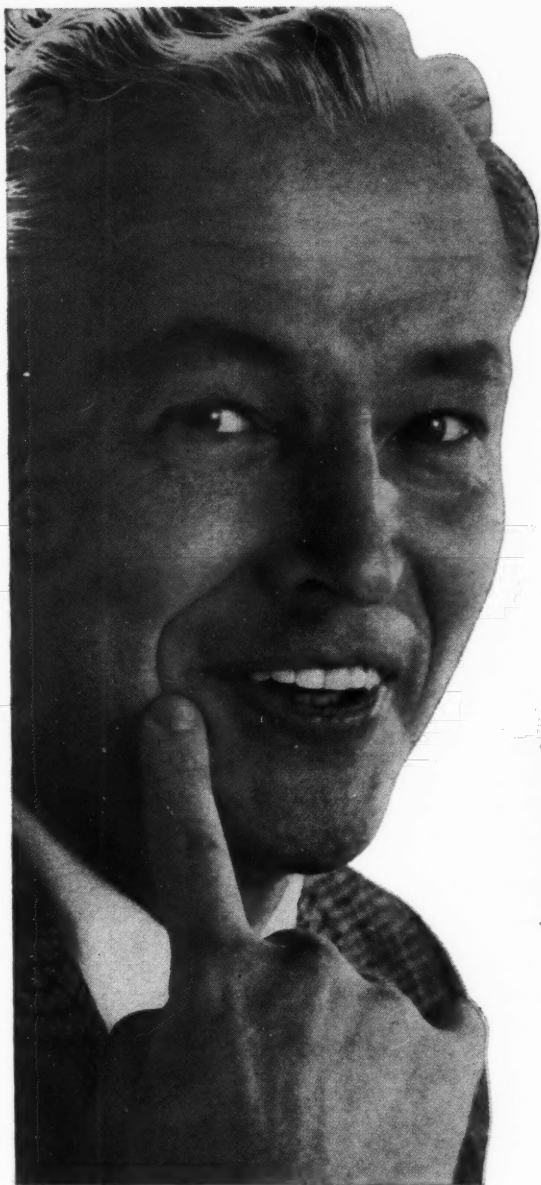
What would a similar study reveal among dentists? If 42 per cent of Air Force personnel are in "poor" physical condition; 40 per cent, "fair", only 18 per cent "good"—it is likely that less than 5 per cent of dentists, who follow a sedentary life so diligently, are in "good" physical condition.

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—E. J. R.

Advertising Index

AGSA, Inc.	570
Anacin	529
Benzodent	534
Columbia Dentoform Co.	572
Cook-Waite Laboratories, Inc.	Third Cover
Dentists' Supply Co. of N.Y., The	Fourth Cover
Jelenko Co., Inc., J. F.	563
Knox Co., The	576
Leeming & Co., Inc., Thomas	532, 533
Lilly & Co., Eli	531
Mayflower Dental Products	566
Mepergan	573
Myerson Tooth Corp.	530
Peter, Strong & Co., Inc.	534
Profie	534
Sorrento Hotel	563
Thermodent	532, 533
Universal Dental Co.	Second Cover
V-Cillin K	531
White Dental Mfg. Co., The S. S.	564
Whitehall Laboratories	529
Wyeth Laboratories	573
Young Dental Mfg. Co.	567



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